

# The Canadian Medical Association Journal

Vol. XIV

TORONTO, JUNE, 1924

No. 6

## An Address

ON

### SOME EFFECTS OF TEMPERATURE ON THE BLOOD AND CIRCULATION\*

JONATHAN MEAKINS, M.D., F.R.C.P.E.

THE influence of temperature upon the animal organism has been vaguely conceived for many centuries, but it may be said that its use as a therapeutic agent has been based upon empirical observations. Of recent years, however, much work has been done to investigate the effect of heat and cold upon the functions of the animal body. This work has been undertaken, in the main, to elucidate the effect of certain abnormal conditions of environment or to study the manner in which the body responds to external stimuli. In other words, by what means does it adapt itself to changes of temperature. In few of these investigations has the therapeutic effect of heat and cold been under consideration. Nevertheless, the knowledge obtained through these experiments when reviewed with this point in view throws a great deal of new light upon the indications for its use, and the effects likely to be produced by this ancient and valuable therapeutic agent. It was not to be expected that the means employed to produce the temperature changes should be always the same. In consequence the results sometimes appeared conflicting, until it was appreciated that other physical characters of the agent, besides that of temperature, might have an important influence in producing some of the changes observed. On considering the therapeutic influence of temper-

ature it may be well at the outset to review the changes in the general condition of the organism when the internal temperature of the body is altered. Probably one of the most important results of such a change is that upon the general metabolism. Krogh<sup>1</sup> has given an excellent review of the effect of changes of body temperature upon metabolism. In general the experiments would undoubtedly indicate that the general metabolism increases in direct ratio to the increase of body temperature, until a maximum is reached when the metabolism begins to decline. This decline seemed to be due to a deleterious effect which an excessive increase of temperature had upon the vitality of the organism. When the surface of the body is exposed to low temperatures or when the cooling powers of the environment are greatly increased there is a pronounced acceleration of the metabolism. As a result of the cooling the thermogenic power is increased. This may occur at such a rate as to produce a distinct rise in the rectal temperature in spite of the heat loss. If the exposure be too severe and continued the thermogenic power becomes depressed and the body temperature and metabolism begin to fall. This subject has been carefully investigated by Lefèvre, Rubner, Leonard Hill and others.

In man, when an increase of body temperature occurs, as in fever due to infectious processes, there is a definite increase in the meta-

\*Read before the Medico-Chirurgical Society, Harrogate, April 12th, 1924.

bolic rate. This increase of metabolism during infective fevers has been shown by Du Bois<sup>6</sup> to be directly proportional to the rise in temperature, being 13 per cent. higher for each degree centigrade above normal. This accords very closely to the temperature law of van't Hoff. In thermal fever produced by immersion in a hot bath, Koehler<sup>7</sup> has shown a similar increase in oxygen consumption. Whether the increased metabolism and fever are both due to a common cause or are interdependent has not been definitely determined.

Practically all experiments upon normal man, in regard to the influence of changes of body temperature, have been carried out between 37°C. and 41°C. Such elevations of temperature have usually been produced by immersion of the body in hot water or in hot air or electric cabinets. As might be expected the results were modified by the character of the medium by which the increase of body temperature was produced.

Hill and Flack<sup>8</sup> were the first to make a study of the effect of thermal fever upon the human body. They found on immersion up to the neck in hot water that the body temperature could be appreciably increased. With this increase there was tachycardia, increased pulse pressure, hyperpnoea, and fall in carbon dioxide partial pressure in the alveolar air with increase of that of the oxygen. They also found that a healthy individual could hold his breath 2½ times as long as normally. A partial immersion immediately lessened all these effects while a cold shower practically reversed all the phenomena except the rectal temperature which remained elevated. Experiments carried out by Bazett and Haldane<sup>2</sup> are also of much interest. They immersed healthy men up to the neck in a bath in which the water was kept circulating at a constant temperature. They were able to keep the body temperature steady or raise it at will to any desired point or at any rate. At temperatures above 37° C. they found the body temperature to be slightly greater, up to 0.2°C., than that of the water.<sup>†</sup> At 37°C. the respiration remained normal but the pulse rate slightly increased while both the systolic and diastolic blood pressure fell (10 - 20 mm. Hg.) The most obvious result was

a conspicuous diuresis which reached its maximum during the second half hour as a rule, and the normal flow was not re-established for 3 or 4 hours after immersion. The quantitative chemical character of the urine did not materially change although qualitatively it gave all the expected results of dilution. This diuresis was not apparently the result of absorption of water but was probably due to the tissue fluids being squeezed into the circulation by the pressure of the water.

A rapid increase of body temperature produced pronounced respiratory disturbances. These were in proportion to the rate at which the temperature was raised. The first sign was hyperpnoea. In one experiment in which the temperature was raised at a rate of 0.13°C. per minute the expired air increased from 6 litres to 27.3 litres per minute. There was a rapid rise in the respiratory quotient to 1.3, and the alveolar carbon dioxide fell from a partial pressure of 38.7 to 25.6 mm. During this period there developed faintness, mental confusion and tingling. These latter symptoms could be relieved or prevented by inhaling a mixture rich in carbon dioxide or in oxygen. The authors concluded therefore that these symptoms were due to an overstability of the oxy-haemoglobin resulting from acapnoea. A similar condition may be produced by excessive removal of carbon dioxide through forced breathing. The urine during this period of hyperpnoea differed conspicuously from that when the temperature was steady. The diuresis was not so excessive (probably modified in this way by the sweating). The urine, however, was alkaline and contained no ammonia but much bicarbonate and some ketone bodies. The decrease in the amount of urinary acid and ammonia was in proportion to the degree of the hyperpnoea. The loss of acid could not have occurred through the sweat as this was found to be alkaline with a pH of 7.9.

When the body temperature remained steady at 38.6°C. the hyperpnoea decreased to 12 litres per minute, the respiratory quotient to 0.81 and the alveolar carbon dioxide increased to 30.0 mm. Provided the temperature was not increased, no further respiratory disturbance occurred. There was a decrease in the urinary excretion of acid and ammonia, but they did not disappear as was the case during the period

<sup>†</sup>As there was little difference (0.1° C.) between the mouth and rectal temperatures the former were recorded.

of rapidly increasing body temperature with hyperpnoea.

Sweating began when the temperature rose above 37.2°. There was a progressive increase of the haemoglobin (up to a rise of 16%) in proportion to the amount of sweating, indicating an increased concentration of the blood. The pulse and pulse pressure rose with the body temperature but there were no general circulatory symptoms unless a considerable amount of weight was lost (2 kilos), when the pulse became small and rapid, with restlessness and other symptoms of circulatory failure. The circulatory responses showed individual variations.

The out-standing result obtained by Bazett and Haldane was the pronounced effect which a rapid increase in the body temperature had upon the respiration, the great hyperpnoea with lowering of the alveolar carbon dioxide pressure and (as will be pointed out later) consequently a decrease in the carbon dioxide content of the arterial blood. These phenomena would strongly suggest a pronounced sensitiveness of the respiratory centre to carbon dioxide when the body temperature, and therefore that of the brain, is elevated. This is supported by the experiments of Goldstein (1872). By enclosing the carotids in small metal water-jackets he was able, without changing the rectal temperature of the animal, to increase the temperature of blood going to the brain. He found when he did this that he raised the excitability of the bulbar centres, particularly of the respiratory centres. This was so pronounced that he was unable to produce apnoea by means of forced artificial respiration.

The effect of increasing the body temperature on the carbon dioxide pressure of the alveolar air was first investigated by Haggard.<sup>3</sup> He found, with an increase of body temperature produced by hot baths, that it was lowered and also that the amount in solution in the blood was lowered. He found no proportionate decrease in the alkali reserve. He therefore concluded that unless there was "some alteration in the dissociation constants, the pH was presumably lowered." Experiments *in vitro*, however, show at different temperatures no change in the carbon dioxide dissociation curve of the blood which was not accounted for

by the alteration of the solubility of carbon dioxide and the concentration of  $H_2CO_3$ . Pemberton, Hendrix and Crouter<sup>4</sup> when studying the effects of "electric bakes," confirmed the fall in the alveolar carbon dioxide found by previous workers, while Pemberton and Crouter<sup>5</sup> in similar studies confirmed the increasing alkalinity of the urine and decreasing acidity of the sweat both in normal and arthritic persons.

Cajori, Crouter and Pemberton still further contributed to our knowledge of the effect of heat upon an acid-base balance. They were able on elevating the body temperature to demonstrate that the blood became more alkaline as represented by the pH and that the "alkali reserve" was increased as revealed by carbon dioxide dissociation curves. Consequent upon these disturbances compensatory changes occurred in the urine and sweat.

About the same time Koehler<sup>7</sup> made an extensive study of the acid-base equilibrium of the blood as affected by external heat. He studied and compared the effects of voluntary hyperpnoea, thermal fever and infective fever. He confirmed the results of Hill and Flack<sup>8</sup>, Haggard<sup>3</sup>, and Bazett and Haldane<sup>2</sup>. He also made an extensive study of the pH of the blood by electrometric methods. He found in acute infective fevers that the pH was uniformly higher during the febrile than in the afebrile period. There appeared to be a direct ratio between the degree of fever and that of the pH. On immersion in hot water baths, whereby the body temperature of the subject was raised to between 39.5° and 40.7°C. he confirmed the results of previous workers in regard to the hyperpnoea, increased pulse rate, decrease of alveolar carbon dioxide pressure, decrease of total carbon dioxide in the blood and the increase of the pH. In fact he increased the body temperature so rapidly as to induce tetany such as may result from voluntary hyperpnoea. He demonstrated that these symptoms could be prevented or removed by the inhalation of carbon dioxide. A previous demonstration of this by Bazett and Haldane<sup>2</sup> has already been mentioned.

The tetany which occurs after violent and sudden hyperpnoea would appear to be due to an acute alkalosis produced by the rapid removal of carbon dioxide. The basic ions are

therefore left in the blood and tissues being more slowly eliminated by the urine, sweat, saliva and other secretions. To what an extent the sweat may eliminate carbon dioxide is not exactly known. Shierbeck determined that at a temperature between 29° and 33°C. 8.4 gms. per 24 hours were removed by this means. Above this point it rapidly increased—at 34°C. it was increased to 17 gms. per day and at 38.5°C. might amount to as much as 30 gms. As to whether this is a temporary or a permanent rate of elimination is not known, nor has the relative influence of steady and rapidly increasing febrile conditions been investigated. It may be that this is but a passing increase occurring during the period of rising temperature.

In this connection there have recently been reported some very interesting observations by Argyll Campbell<sup>15</sup>. He found that when he injected air under the skin and then immersed the animal in hot water that the partial pressure of carbon dioxide increased and when the animal was cooled it decreased. The significance of these phenomena is not at present clear.

So far we have been concerned chiefly with the effect of changes of body temperature upon the carbon dioxide, pH and allied conditions of the blood. It is important, however, to inquire in what manner if at all the combination of oxy-haemoglobin may be disturbed. *In vitro* experiments have indicated that as the carbon dioxide pressure decreases the oxy-haemoglobin dissociation curve moves to the left<sup>9</sup>. In other words, the less the partial pressure of carbon dioxide the greater the saturation of oxy-haemoglobin and the more tenaciously will it be retained at a given pressure of oxygen. On the other hand, it has been shown that there is also a shift in the oxy-haemoglobin curve with changes of temperature. If the temperature be increased the curve shifts in an opposite direction or to the right. This would indicate that as the temperature is increased so the saturation of oxy-haemoglobin is decreased at any particular pressure of oxygen, likewise as the temperature increases so the dissociation of oxygen from haemoglobin would occur more rapidly. In the present circumstances of lowered carbon dioxide content and pressure and increased temperature, we have apparently

two conditions operating in opposite directions which might be expected to more or less neutralize each other. That this is the case in pathological conditions is not at all clear. During the past year observations have been carried out to investigate this point.<sup>‡</sup> In the meantime, Koehlar<sup>7</sup> has suggested the possibility of loss of carbon dioxide being a factor in decreasing the oxygenation of the arterial blood under pathological conditions. He briefly discusses the theoretical reasons for such a phenomenon and reports two cases of cyanosis with pronounced alkalosis. The indirect evidence of improvement of symptoms with acid therapy is very suggestive, but it is unfortunate that he did not obtain data regarding the oxygen saturation of the arterial blood or the character of the oxy-haemoglobin curves in these cases. Morris<sup>15</sup> gives details of experiments in which the injection of sodium bicarbonate produced a lowering of the arterial oxygen saturation and an increase of the venous saturation, indicating not only an arterial anoxaemia but also a diminished dissociation of oxygen to the tissues.

The investigations which have been carried on in this department as to the oxy-haemoglobin curve in febrile conditions indicate a conspicuous difference between *in vitro* and *in vivo* experiments. They have confirmed the previous observations that there is an increased alkali reserve in infective fevers, in that both the pH and the carbon dioxide dissociation curve are distinctly shifted to the side of alkalosis, while the oxy-haemoglobin curves of blood taken during the febrile period have shown a distinct shift in the opposite direction.

With a different object in view, Uyeno<sup>10</sup> carried out experiments on cats immersed in hot water. The usual result of extreme hyperpnoea (with rapid and shallow respirations and also an increased oxygen consumption) was obtained, and in addition there was found to be a constant reduction in the arterial oxygen saturation. The hyperpnoea would appear to be readily accounted for. The reduction of arterial oxygen saturation might be explained either by the character of the breathing as suggested some years ago by Haldane, Meakins and Priestley<sup>11</sup> or possibly by a change in

<sup>‡</sup>These observations are presently to be published by Dr. A. C. White.

the chemical equilibrium of the blood as already mentioned by Koehler. An experimental investigation of this point would probably be of great clinical importance.

The experiments of Uyeno were undertaken to determine the effect of increased body temperature upon the minute circulation rate. He found that the volume of blood circulated per minute was increased by 20-30 per cent. Whether this increase in the circulatory minute volume was the result of a generally increased metabolism or the increased action of the respiratory pump was not determined. He came to the conclusion, however, that the effects of the warm water on the skin or the anoxaemia could not presumably explain it. He made observations on the character of the blood in the saphenous vein when the body temperature was raised by immersion in hot water. He found that the oxygen saturation of the blood in the vein was increased, while that of the blood in the right auricle was decreased. On the other hand, although the circulation rate through the saphenous area was definitely greater than normal it was not as proportionately accelerated as that of the general blood flow.

These results of Uyeno corroborate the findings of Meakins and Davies, that the oxygen saturation of the venous blood varies considerably, depending upon the temperature of the part from which the blood comes. Blood from the median basilic vein of the arm placed in hot water at 45° C. was found by them to be 94% saturated with oxygen, while when the arm was exposed to a temperature of approximately 15° C. the saturation was reduced to about 5%. These results were substantiated by Barcroft and Nagahashi<sup>13</sup>, and by Pember-ton, Hendrix and Crouter in "Electric-bakes."<sup>14</sup> Goldschmidt and Light<sup>14</sup> carried out similar experiments in more detail. They not only investigated the oxygen saturation of the haemoglobin from the deep veins at the elbow, but that from the superficial vessels at the back of the hand. They immersed the arm in water varying from 6° to 45° C. At the lowest temperature the percentage saturation of the haemoglobin closely approximated that of the arterial blood. This held not only for the blood obtained from the superficial veins but also from the deep veins presumably draining the

deeper areas. With intermediate temperatures, however, the venous oxygen saturation was much decreased. On further increasing the temperature the oxygen saturation increased in proportion, gradually approximating the saturation of the arterial blood. We have found that the carbon dioxide content of the venous blood follows closely that of the oxygen saturation but in an inverse direction. In those instances where the oxygen saturation was increased so the carbon dioxide content was decreased, while on the contrary when the oxygen saturation was decreased the carbon dioxide content was increased.

These results might be explained upon either of two hypotheses—an increased blood-flow, or a decreased metabolism.

The experiments of Uyeno<sup>10</sup>, and the other observations already reported, seem to prove conclusively that there is a greatly increased metabolism when the body temperature is raised by immersion in hot water. Therefore the increased saturation of the oxy-haemoglobin in the veins when a part is exposed to such conditions appears to be most probably due to a greatly increased circulation. It remains to account for this latter condition. The question arises as to whether the local increased blood flow results from the hyperaemic condition of the skin or whether it be due to the increased metabolism? The experiments of Uyeno would appear to give an answer to this question. On analysing his experiments 16 and 17 it is found in experiment 16 that the oxygen consumption in the saphenous area increased about 2.7 times while the blood flow increased about 6 times. In experiment 17 while the oxygen consumption remained about constant, the blood flow increased 3.3 times. It may be concluded therefore that when the temperature of a local area is increased by immersion in hot water, the increase in local circulation is in great part a direct result of the heat in producing a local hyperaemia.

Barcroft and Marshall<sup>14</sup> carried out some experiments on man to determine if the general circulation rate was influenced by the surrounding temperature. On exposure to cold (-1° C.) almost to the production of obvious shivering, they found that there was a regular increase in the circulation rate per minute which was very closely parallel to the increase

of metabolism. (This was probably closely connected with the muscular movements resulting from the shivering). When the surrounding temperature was increased to about 40° C. the circulation rate increased, but to a much less extent and there was no appreciable change in the metabolism. The increased blood flow could quite readily be accounted for by the increased circulation through the skin. This in some of the experiments must have been considerable. As for instance on Marshall, the general blood flow increased from 3 to 6.8 litres per minute (127%) while the oxygen saturation of the mixed venous blood increased from 37 to 70 per cent. As there was practically no increase in the metabolism this increased blood flow was most probably in the superficial vessels and therefore by decreased utilization of oxygen in these areas the oxygen saturation of the mixed venous blood was raised by probably more than 100 per cent. (as when the surface of the body is exposed to room temperature the oxygen saturation of the venous blood from the superficial areas is probably much below that from the viscera).

Reference has been made to the findings of Bazett and Haldane that where there was extreme sweating the haemoglobin percentage increased from 10 to 16 per cent., indicating a proportionate concentration of the circulating blood. If this were always the case it would indicate a decrease in the total blood volume circulating at the moment. The effect of temperature upon the apparent blood volume is one of great interest. It was observed by the Royal Society Expedition to Peru<sup>16</sup> that the blood volume, as calculated by the carbon monoxide method, underwent considerable changes with the temperature of the atmosphere in which the subject was living; being greater in tropical than in more temperate climates. These observations were subsequently confirmed by experiments in a chamber where the air was artificially heated. In neither case was there any obvious change in the concentration of the blood as indicated by the haemoglobin percentage, although the total circulating haemoglobin appeared to increase conspicuously and at such a rate as could not be accounted for by fresh formation of the pigment. If this were not the case could it be accounted for by the fact that there was a considerable number

of red blood corpuscles in the body to which the carbon monoxide was not readily accessible, but which could be thrust into the circulation if circumstances demanded? This question has to some extent been answered by Barcroft and Barcroft<sup>17</sup>. They found that the red blood cells of the spleen acquire CO very slowly and that the CO saturation of haemoglobin in this organ lags far behind that of the general circulation. They demonstrated in rats that after breathing CO for an hour the saturation in the spleen was not equal to that in the circulating blood. Conversely they found that the blood in the spleen gave up its CO much more slowly than that in the general circulation. It would appear, therefore, that it depends upon the acuteness of the sweating and the character of the environment as to what effect temperature may have upon the concentration of the blood and the apparent blood volume. It might be found in such experiments as Bazett and Haldane carried out, that there would be not only an increased concentration of the haemoglobin but also an increase in the total amount in the general circulation.

In regard to the effect of temperature upon blood volume and concentration the work of Barbour and his associates must here be considered. He<sup>18</sup> found with dogs that immersion in a hot bath (40° C.) produced a dilution of the blood solids, while exposure to cold or an increased cooling power reversed the process. He also demonstrated a distinct change in the brain volume, the brain becoming larger and apparently more ischaemic on exposure to cold, while the reverse happened with heat. All these results occurred even when the blood temperature remained normal. In animals with the spinal cord or brain destroyed the blood changes did not occur in spite of great fluctuations in the body temperature<sup>20</sup>. He comes to the tentative conclusion that the concentration and dilution of the blood under changes of temperature is an essential factor in the maintenance of a constant body temperature<sup>21</sup>. Lozinsky<sup>22</sup> continued this investigation with reference to the effects of "dry" and "moist" heat. He concluded that dogs in part regulate the body temperature by blood dilution—in "moist" air between 27° and 30° C. and in "dry" air between 37° and 39° C. In "moist" air temperatures above 33° C. and in "dry"

air temperatures above 42° C. they regulate the body temperature very imperfectly and marked blood concentration occurs.

The evidence at present available would indicate a difference between the heat control methods in dogs and man. The experiments all go to show that in man there is a concentration of the blood solids and haemoglobin<sup>23</sup> on exposure to heat. This is most pronounced when there is a high humidity, under which conditions the cooling power of sweating is least efficient and therefore the loss of water through the skin is most abundant. Hunt<sup>24</sup>, however, demonstrated that during exposure to "dry" heat there may be a conspicuous loss of weight (2.5 kilo) without evidence of an altered fluid content of the blood. It would appear that additional investigations are necessary under different conditions in man before this point can be settled.

The response to more prolonged and extreme changes of temperature particularly in association with muscular work does not particularly concern us at the moment. The consideration of these problems is more intimately connected with "water poisoning."

#### SUMMARY

The effects of increase or decrease of body temperature may be summarized as follows:

*Respiratory Exchange and Metabolism.*—If the body temperature be rapidly increased there is a pronounced hyperpnoea with rapid elimination of carbon dioxide, as a result of which the respiratory quotient may be above unity. If the body temperature be raised by the application of external heat or through infective processes there is an increase of metabolism in proportion to the increase of body temperature. If, however, the external heat be not sufficient to raise the body temperature the respiration and metabolism remain practically constant. If the increase of body temperature be too severe and prolonged the metabolic processes will gradually become less than normal and eventually may cease. The application of cold in such a manner as to increase the cooling power of the body produces a very pronounced increase of metabolism which will continue until the thermogenic power becomes exhausted and then a decrease of metabolism will take place.

*Circulation.*—On exposure to heat there is a tachycardia, lowering of the diastolic blood pressure, an inconstant increase of the systolic pressure and an absolute increase of the pulse pressure. Coincident with these changes there is an increase in the total blood flow which is proportional to the increase in the cutaneous circulation. If, however, the body temperature be raised the increased blood flow is greater than can be so accounted for, and is probably the result of the increased metabolism. When the dilatation of the cutaneous capillaries becomes extreme there develops deficiency of the return flow of blood to the heart with signs of circulatory failure. When the body is exposed to cold there is an increase of the circulation which appears to be directly parallel to the increase in metabolism.

*Blood.*—The removal of carbon dioxide resulting from the hyperpnoea leads to a pronounced decrease in the partial pressure and to a smaller decrease in the carbon dioxide content of the arterial blood. This usually leads to an uncompensating alkalosis and an increase in the pH of the blood. The effect on the oxyhaemoglobin is more indefinite but none the less important. Some direct and indirect observations suggest a decrease in the combining power while others might indicate an instability in regard to the tissue. The common result, however, would point towards a more or less pronounced decrease in utilization of oxygen by the tissues. There also results a concentration of the blood resulting from the loss of fluid either through diuresis or sweating. This is demonstrated by the increase of the haemoglobin percentage and the concentration of the blood solids. This concentration of the blood is more pronounced with "moist" than with "dry" heat.

*Urine.*—On immersion in hot water there is produced a copious diuresis. This is greatest when the body temperature remains normal and is probably caused by the pressure of the water. If the body temperature be raised and profuse sweating occurs the diuresis is not so pronounced. With the rise of body temperature and the hyperpnoea, the urine changes from an acid to an alkaline reaction, the amount of acid and ammonia eliminated may be reduced to zero and the urine may contain bicarbonates. This change towards the alkaline

reaction with suppression of acid and ammonia excretion is in proportion to the hyperpnoea.

**Sweat.**—When the temperature of the hot bath is above 35° C. sweating begins. If the body temperature be raised the pH of this secretion becomes more alkaline and it contains an increased quantity of carbon dioxide.

The ideal in therapeutics is to know in the first instance in what manner the human organism is disturbed by either functional or structural changes, and the etiological factor producing such altered conditions. Usually, if the cause be removed, the organism will automatically and rapidly recover. On the other hand, it is often necessary to adopt such measures as will aid the organization to rectify processes which, if carried beyond a certain point, may menace its well being.

Under all these conditions it should be our endeavour to accurately determine the manner of the disturbances and the method of operation of the remedies employed; the twilight of empiricism being replaced by the sunlight

of critical knowledge based upon accurate observations.

#### REFERENCES

- (1) KROGH, *The Respiratory Exchange of Animals and Man*, London, 1916.
- (2) BAZETT AND HALDANE, *Jour. of Physiol.*, 1921, Iv, iv.
- (3) HAGGARD, *Jour. Biol. Chem.*, 1920, xliv, 131.
- (4) PEMBERTON, HENDRIX AND CROUTER, *Jour. Metabol. Res.*, 1922, ii, 301.
- (5) PEMBERTON AND CROUTER, *Jour. Amer. Med. Ass.*, 1923, lxxx, 289.
- (6) DU BOIS, *Jour. Amer. Med. Ass.*, 1921, lxxvii, 352.
- (7) KOEHLER, *Arch. Int. Med.*, 1923, xxxi, 590.
- (8) HILL AND FLACK, *Jour. of Physiol.*, 1909, xxxviii, lvii.
- (9) BARCROFT, AND POULTON, *Jour. of Physiol.*, 1913, xlvi, Feb'y.
- (10) UYENO, *Jour. of Physiol.*, 1923, lvii, 203.
- (11) HALDANE, PRIESTLEY AND MEAKINS, *Jour. of Physiol.*, 1919, lii, 433.
- (12) MEAKINS AND DAVIES, *Jour. of Pathol. and Bacteriol.*, 1920, xxii, 451.
- (13) BARCROFT AND NAGAHASHI, *Jour. of Physiol.*, 1921, Iv, 339.
- (14) BARCROFT AND MARSHALL, *Jour. of Physiol.*, 1923, lviii, 145.
- (15) MORRIS, *Brit. Jour. of Exper. Pathol.*, 1922, iii, 101.
- (16) BARCROFT, BINGER, BOCK ET AL, *Phil. Trans. of Roy. Soc.*, 1922, B, 211, 419 and 455.
- (17) BARCROFT AND BARCROFT, *Jour. of Physiol.*, 1923, lviii, 138.
- (18) CAMPBELL, ARGYLL, *Jour. of Physiol.*, 1923, lvii, 273.
- (19) BARBOUR, *Amer. Jour. of Physiol.*, 1923, lxvii, 366.
- (20) BARBOUR AND TOLSTOI, *Amer. Jour. of Physiol.*, 1923, lxvii, 378.
- (21) BARBOUR, *Physiol. Reviews*, 1921, i, 295.
- (22) LOZINSKY, *Amer. Jour. of Physiol.*, 1923, lxvii, 388.
- (23) YOUNG, BREINI, HARRIS, AND OSBORNE, *Proc. Roy. Soc.*, 1920, xci, B, iii.
- (24) HUNT, *Jour. Hygiene*, 1912, xii, 479.

#### A Simple Method of Prescribing Diabetic Diets.

George Baehr, Herman Lande and Lulu G. Graves, New York, offer a series of twelve test diets devised for the general practitioner in medicine, to assist him to prescribe accurate diabetic diets without the use of mathematical formulas. With its aid, the physician should be able to prescribe well balanced diets of known food value and immediately write out the menus for three meals a day with the accuracy of a trained dietitian. In preparing this table the authors have modified the one of Joslin so as to make it conform to the present day needs of the high fat, low protein diets for patients with diabetes. They therefore preserve a proper antiketogenic balance. They contain a constant minimum amount of protein and a moderately large amount of fat. The carbohydrate foods are in one group and the protein and fat in another. This makes it possible to increase the carbohydrate foods in each succeeding test diet, whereas the quantities of protein and fat remain practically constant. The fat is reduced in the higher diets only in order to keep the total food values below the needs of the individual, and so maintain a moderate undernu-

trition during the test period. The twelve diets are called test diets, for they are designed to be used only during the first week or two, in order to eliminate the patient's glycosuria, reduce his blood sugar to a more normal level, and then test his maximum glucose burning ability. After this has been accomplished, the diet is increased in accordance with certain rules, this final, more adequate diet being called the permanent maintenance diet.

—*Jour. Am. Med. Assoc.*, May 10, 1924.

#### Papillary Epithelioma of the Kidney Pelvis.

The chief symptom in the case reported by Carl Eggers and Joseph Felsen, New York, was hematuria, and, as the result of loss of blood, weakness and dyspnea. A tumor was not palpable, owing to the fact that the kidney was not enlarged. The roentgen-ray findings were negative. The cystoscopic findings showing the blood to come from the left side, together with the marked diminution of the kidney function on the affected side, were of great value. The kidney was removed. Four years after operation, there had been no return of symptoms.—*Jour. Am. Med. Assoc.*, May 3, 1924.

## An Address

### ON THE USE OF IMMUNE SERA\*

H. B. CUSHING, M.D.

*Montreal*

IT is not my purpose this evening to give an elaborate disquisition on the science of immunology, or to advance any original ideas on the composition or action of immune sera; it is only that for some years past I have had an unusual opportunity of observing the use of such sera, in the wards of the Alexandra Hospital, and in the Royal Victoria and Children's Memorial Hospitals; and I thought that some of my observations and conclusions might be of interest to those members of the Society who are not in a position to note the use of these agents so frequently.

It is thirty years since Behring (1894), noting the immunity of animals to a second attack of certain infections, introduced the method of using the blood serum of these immunized animals for the prevention and treatment of disease in man. The spectacular success of diphtheria antitoxin led to the hope of overcoming all infections by this means. As we all know this led to disappointment, and it is only recently that we are realizing the limitations of this method of treatment and gradually overcoming its difficulties. There is always some uncertainty in estimating the value of treatment in these cases. All these acute infections, are self-limited, and other factors come in, which are hard to estimate, e.g., the beneficial effects of any foreign protein reaction. Our thirty years of experience with the use of these sera have gradually taught us certain underlying principles and limitations, and it is these which I wished to review this evening.

In the first place, we have come to recognize the need of an overwhelming dosage to obtain results. In the case of diphtheria antitoxin, in an average case in a child one gives at least 5,000 units, i.e., enough to neutralize sufficient toxin to kill 100 children. This is apparently

true because of the difficulty of bringing the toxin and antitoxin together in the body, and emphasizes the necessity for maximum doses in such fatal diseases as tetanus and meningitis. This rule does not hold true where the serum is used for prophylaxis. For this purpose a small dose is apparently quite sufficient, e.g., 500 units renders a child immune to diphtheria, and in the recent war small doses of antitetanic serum were found effectual in preventing the disease.

A second principle arising from the first is the necessity of producing a concentrated serum if we wish to introduce sufficient in a convenient manner. This aim has been achieved in recent years by heating the serum and precipitating it by ammonium sulphate producing the so-called serum globulins which are concentrated at least six times. Also by using only certain strains of germs which are found to be capable of exciting the production of a maximum amount of antibodies and using only certain horses or other animals which are found by actual testing to be capable of reacting so as to produce a concentrated serum. Thus we can understand how the method of using the serum of convalescents for treatment, as has recently been done in scarlet fever and poliomyelitis must be a most uncertain measure, as we have no way of estimating the amount of antibodies present in their serum. The concentration of modern antitoxin has now been carried on to such an extent that an immunizing dose can often be given by an ordinary hypodermic syringe, thus removing some of the objections to its use.

A third point which is not sufficiently recognized is the time required by an antitoxin to produce its full effect. In diphtheria the subcutaneous method requires 3 whole days to reach the maximum concentration of antitoxin in the blood, and the intramuscular method 2 days. Hence the advisability of giving one maximum dose in the beginning and not re-

\*Delivered at a meeting of the Montreal Medico-Chirurgical Society, March 21, 1924.

peated small doses. Recently other methods of administration have been introduced to overcome this difficulty. The intraperitoneal method is useful especially in infants; it is apparently easy and safe, producing no peritoneal irritation and securing a very rapid absorption. However for efficiency no method compares to the intravenous, which produces greater concentration in the blood than all others and produces it practically instantaneously. This is shown in the case of diphtheria, not only by examination of the blood after injection but by the rapid effect on the temperature and the visible signs of the disease. The intravenous method is especially applicable in tetanus and in meningitis. In the latter disease recent investigations have shown it is always a septicaemia in the beginning and if the case is seen early the intravenous injection should always supplement the intraspinous. In fact the intravenous method should supplant all others, if it were not for the mechanical difficulties of using it, especially in young children, and for the risk of alarming chills and other foreign protein reactions which are apt to occur immediately after its use. However the intramuscular route should always replace the subcutaneous.

The fourth principle to which I might refer is the impossibility of overtaking or counteracting toxins which are already fixed in the tissues, e.g., in a severe case of diphtheria with extensive membrane, seen on or after the third day of the disease, no dose of serum or method of administration is going to prevent the later effects on the heart, kidneys, or nervous system. The same principle is seen in tetanus where serum given after the onset of clinical symptoms rarely saves the patient. This emphasizes the necessity of getting the anti-bodies circulating in the blood at the earliest possible date.

The fifth point is the very rapid elimination of antibodies from the system if they are artificially introduced, i.e., in passive immunity. This is well illustrated in diphtheria by means of the Schick reaction; a positive reaction is changed to a negative one by an immunizing dose of antitoxin but becomes positive again in a few weeks. Again it was noticed in the late war that soldiers with foul infected wounds sometimes developed tetanus after the effect

of an initial prophylactic dose of serum had worn off.

A sixth point is the failure of serum through the fact that most microbes have a series of diverse strains, and a serum prepared from one strain may be impotent against other strains. The most familiar instance of this is in the case of the pneumococcus where a serum prepared from type 1 is only efficacious against this type. The same principle was illustrated in the case of meningitis during the late war. When meningitis broke out among the Canadian forces the serum at first used was quite ineffective and it was only on preparing polyvalent serum from many strains that any satisfactory results were obtained. It is often more satisfactory in this disease to use serum from different sources when repeating the dose unless there is definite evidence that the serum first used was effective.

Whenever the use of immune serum is discussed the question of anaphylaxis is certain to be raised and the possible danger which may arise from the use of a serum. All know that laboratory animals may be sensitized by a foreign protein and subsequent small doses of the protein cause the death of the animal. All I can say is that man does not react in this way; it is doubtful if true anaphylaxis really occurs in man. On the other hand deaths have occurred from the therapeutic use of immune serum. These deaths have almost invariably been due to an initial dose of the serum, not to a sensitization by repetition, hence are not due to an anaphylaxis, and have occurred within an hour or two of the administration. How excessively rare this mishap is may be judged from the fact no deaths have occurred in the Alexandra Hospital in 15 years from this cause among many thousand administrations of serum. On the other hand, ordinary serum sickness, characterized by urticarial eruption, fever, pains, vomiting, etc., is not infrequent, usually occurring 5 to 8 days after the injection. This serum sickness does not appear to be dangerous but causes great discomfort especially in adults, children are rarely distressed by it. The reaction is much less frequent since the new concentrated antitoxin has been in use. Hypodermic injection of adrenalin is the only measure which seems to afford any relief.

In view of the serious nature of the diseases

treated it seems we might disregard the remote danger of sudden protein shock and the discomfort of the serum sickness. The only cases where they have to be really considered are in adults, and especially those giving a history of asthma or other protein hypersensitiveness. A final point to which I might refer is that all serums and antitoxins gradually lose potency on standing. This deterioration is less rapid if they are kept in a cold place and in the dark; but speaking of this city only, one has only to

visit 2 or 3 of the larger drug stores at random and ask for some serum to see how these precautions are neglected; and I think it is not too much to say that most of the serums purchased indiscriminately at drug stores are practically inert. It seems unfortunate that there is no system in this province for the provision of serum for indigent cases, as is done almost universally elsewhere on the continent, and also for an official inspection of the product as usually supplied. •

---

### Clinical Lecture on LEAD NEUROPATHY

A. H. GORDON, M.D.

*Assistant Professor of Medicine, McGill University, Montreal  
Physician to the Montreal General Hospital*

THOUGH poisoning by lead is perhaps not as common as it used to be, as a result of the improvements in industrial methods, it is yet far from rare, and is by no means a clinical curiosity, and it is more on account of certain unusual side issues and the diagnostic lessons which they teach, that this case is brought before you to-day.

The history, shorn of inconsequential details is something as follows: This young man of twenty-eight is a farmer, a married man without children, living some miles from a small town a distance from Montreal. He was brought to the hospital on a stretcher and complained of general weakness and loss of weight, of paralysis of both arms, and of double vision.

For several years he had been subject to attacks of painful "indigestion" and was operated upon three years ago for chronic appendicitis, and two years ago for gall bladder disease. He states that following each operation his pain was better for a time after leaving the hospital, but again returned, and during the past summer and autumn it has been so bad that on several occasions he called a physician who gave him morphia under the skin. Though reduced in weight and strength he kept at work until three weeks ago. At that time he was driving, and his horse bolted, and he had difficulty in pulling him in, and following this he developed weakness in both

arms which rapidly became extreme, and for the last few days his arms and hands have been almost powerless, so much so that he has been unable to feed himself. There is also slight pain and some stiffness and awkwardness. His general strength is much impaired and he has lost greatly in weight. He is only able to stand with help and walks with difficulty. Lately he has been seeing double, but his vision is otherwise good. He neither smokes nor drinks and has no venereal history. The other details of his personal and family history are irrelevant. His temperature is 98.2, his pulse 96 and his respirations 24. You will notice his sallow colour, and the paleness of his mucous membranes and finger nails, and the general appearance of moderate emaciation which he presents.

We will reverse the usual order and have you look first at these arms and hands which lie supine and flaccid on the clothes. When the bed is turned around you can see the marked atrophy of both the supraspinatus and infraspinatus muscles, the trapezius and the rhomboids, and from the front the wasting of the pectorals, and these all show a well marked weakness. The deltoids too are flat and raise the arms with difficulty. The biceps is weak but not powerless, but the triceps on both sides shows the greatest weakness of all, while the supinator longus shows

no apparent weakness when he attempts to flex the forearm while it is midway between pronation and supination. The extensors of the wrist are extremely weak—he is unable to raise the unopposed hand. The grasp of the hand is very feeble while the palmar and interossei muscles show marked atrophy.

Let us look now at the legs. The iliopsoas muscles show some weakness and so do the flexors and extensors of the legs and feet but in no case does it amount to paresis, in marked contrast to the condition of the upper extremities. The knee jerks are present, the plantar reflex is feeble in flexion, and the abdominal reflex is active, while the triceps and radial reflexes and the deltoid and pectoral responses are all very feeble. The organic reflexes are all preserved.

Both hands when lifted show a distinct rather coarse tremor, and the tongue is also tremulous. The pupils are even and active, and there is no diplopia to-day, though the patient is very positive that it existed, and states that one image was above the other. The ocular fundi show a well marked neuroretinitis.

I have shown you these features of his nervous system first to emphasize the condition which has brought him to the hospital. He has a practically pure lower motor neurone involvement affecting chiefly his upper limbs.

Now let us return to the routine examination. Looking at his mouth you will see that several teeth have been removed, they were said to have been infected; the remaining front teeth are good, well kept, and show nothing of importance, but looking farther back we find above the left upper bicuspid and first molar a dark line in the gum; fragmentary lines are also seen over two of the right lower back teeth, and over a right upper molar. Examined with a lens these lines are definitely stippled and are undoubtedly in the substance of the gum.

Examination of the thoracic and abdominal organs gives only two positive findings; an accentuation of the aortic second sound and a faint trace of albumin in the urine. The Wassermann reaction is negative.

The blood examination shows 3,680,000 red cells, 5,600 white cells, haemoglobin 62%, polymorphs 71%, mononuclears large and small 27%, mast cells 1% and eosinophiles 1%. The red cells show marked pallor with alterations in size and shape, and there are numerous stippled red cells (basophilic granulation) often four and five to an oil immersion field. By a curious accident

the first smear made showed no stippled cells, and thereby hangs a tale.

The patient's wife had accompanied him to the hospital, and after the first suspicion of lead poisoning had been raised by the few dark lines above his back teeth, he was questioned as to a possible source of poisoning, when he stated that he had not been using paint or lead in any form, but on inquiry being made concerning his water supply he stated that for years it had come from the present source, a small spring which had been boxed, and piped for eighty rods to the kitchen of his house by a lead pipe which was connected with a constantly running tap. This spring went through a hollow in the land which left a concavity or belly in its length and during dry periods the water ran slowly and had a longer stay in the concavity. Such a dry spell had recently occurred.

The ease for lead poisoning being thus far only a well-grounded suspicion, with at that time no proof in the blood, and an imperfect line on the gums, we had recourse to the old method employed in the diagnosis of venereal disease—"confrontation."

If the water supply was at fault the patient's wife should also show signs of lead poisoning. Her mouth, less perfectly kept, showed an unmistakable lead line above every tooth, and on inquiry she admitted also a painful "indigestion" for which she had been treated. These findings, joined with the patient's condition seemed sufficient for a diagnosis of lead poisoning; every succeeding blood smear of the patient showed many stippled cells.

It is not necessary to emphasize the usual method of contracting lead poisoning in the manufacture and employment of lead in the various industries. A worker in a lead or paint factory, a painter, or a maker of batteries is always under suspicion—"a man is known by the company he keeps,"—but a farmer of all men might reasonably avoid such a suspicion, and so I might remind you of some of the more unusual modes of contamination.

Two years ago a man entered our service with lead poisoning. His history was that he had diarrhoea and had received a prescription for lead and opium pills, and finding them useful he had the prescription repeated a number of times until he had taken three or four dozen, when he appeared with colic and a very definite lead line on his gums.

You may also recall the case reported by Dr

W. F. Hamilton, of several instances of lead encephalopathy in one family following the burning for fuel broken boxes in which white lead had been contained; and again, the very interesting group of cases which occurred one summer and were reported by Dr. H. B. Cushing, in which lead poisoning developed among owners of small soda water fountains. He found that they had drunk their own beverage after the carbonated water had been undisturbed for some hours in the lead container. Then there are the instances of poisoning from pickles kept in vessels lined with lead glaze; not to mention instances in which hair dye, face powder and such other resources of civilization contained the poison.

These points thus emerge as lessons from this case:

- 1.—The sudden appearance of paralytic manifestations as a result of stress (pulling up a runaway horse) in a man probably long a subject of lead poisoning.
- 2.—The unusual type of the paralysis—shoulder girdle and arm.
- 3.—Contamination from a water supply in use for years.
- 4.—Confirming of the diagnosis by "Confrontation."
- 5.—The light thus thrown upon the patient's previous abdominal complaints.

## THE INFLUENCE OF INFECTION UPON THE REACTION OF THE DIABETIC TO INSULIN TREATMENT\*

I. M. RABINOWITCH, M.D.

*Montreal*

THE object of this communication is to record the types of "blood sugar time curves" obtained from patients suffering from diabetes mellitus, complicated by gangrene and infection, which demonstrate the influence of the latter upon the reaction of such individuals to insulin treatment.

It is generally recognized that infection is an important factor influencing the mortality statistics of diabetes mellitus. The statistical data of this hospital, recorded briefly below, may be used to demonstrate this point.

Total number of diabetics treated from April, 1920 to April, 1924—412.

Total number of deaths, 25 or 6.06%.

Causes of death:

Coma .....	10 or 2.42%
Infection .....	9 or 2.12%
Cerebral Haemorrhage .....	2
Pulmonary     "     ....	2
Inanition     "     ....	2

It will be noted that infection accounted for approximately the same number of deaths as did coma. If the data are divided as obtained

from two periods—before and after the advent of insulin treatment—the influence of infection upon the mortality rate is still more strikingly demonstrated. Since insulin was first employed 196 patients have been treated for diabetes (including those with and without insulin). Amongst these the total number of deaths was 4. Thus insulin has reduced the mortality rate in this hospital to approximately two per cent. All of these four patients died of a septicaemia. In only one could there be demonstrated, from the laboratory view point, an acidosis of a sufficient degree to cause death from diabetic coma. No uncomplicated case of diabetic coma has as yet failed to respond to insulin treatment.

The "blood sugar time curves" obtained following the administration of insulin in the cases of diabetes mellitus complicated by infection presented one phenomenon in common, namely, the absence of the characteristic rapid onset and steep nature of the fall of the blood sugar. Various types of curves have been noted. In isolated instances with septicaemia and severe acidosis only the slightest changes were noted in spite of the enormous doses of insulin (100 units) administered. Thus:

\*From the Department of Metabolism, Montreal General Hospital.

Hosp. No. 3938; Female aged 50. Infected gangrene of right leg—Septicaemia.

Time	Blood Sugar %
Before administration	0.357 Insulin 100 units
1 hr. after "	0.344
2 " "	0.333
3 " "	0.285
4 " "	0.302

Fever seemed to be an influencing factor in the great majority of cases. In two cases with infected gangrene the "blood sugar time curves" were obtained before and two weeks after amputation of the gangrenous extremity. The following are the data. In Case No. 4260-23 the fever persisted in spite of the amputation. In Case No. 146-24 the temperature had returned to normal. Thus:

Hosp. No. 4260-23 M., age 65. Infected gangrene of leg.

Before operation, Temp. 101°

Time	Blood Sugar %
Before administration	0.285 Insulin 20 units
1 hr. after "	0.250
2 " "	0.251
3 " "	0.252

Two weeks after operation, Temp. 102.1°

Time	Blood Sugar %
Before administration	0.285 Insulin 20 units
1 hour after "	0.210
2 " "	0.212
3 " "	0.212

Hosp. No. 146-24 M. Age 57. Infected Gangrene of foot.

Before operation, Temp. 102.4°

Time	Blood Sugar %
Before administration	0.385 Insulin 20 units
1 hour after "	0.332
2 " "	0.278
3 " "	0.277

Two weeks after operation, Temp. 98.2°

Time	Blood Sugar %
Before administration	0.196 Insulin 20 units
1 hour after "	missed
2 " "	0.097
3 " "	0.036 Hypoglycaemic reaction.

It will be noted that in patient No. 146-24 following operation and in absence of fever a characteristic curve was obtained.

Though in the greatest number of cases the slow response to insulin was associated with fever, such a reaction was noted in the absence of fever, but in the presence of suppuration.

Hosp. No. 5951-23 M. Age 59. Abscess thigh. Profuse suppuration. Temp. 98.4°.

Time	Blood Sugar %
Before administration	0.526 Insulin 60 units
1 hour after "	0.500
2 " "	0.476
3 " "	0.500
4 " "	0.501

In two cases of diabetes complicated by uraemia, the curves obtained differed. In one, Hosp. No. 3531-23, death was due to uraemia (blood urea nitrogen 136 mgm. per 100 cc., creatinine 3.26 mgm.) The reaction to insulin was characteristic. At the time of death there were no laboratory data suggestive of an acidosis.

Time	Blood Sugar %
Before administration	0.526 Insulin 50 units
1 hour after "	0.357
2 " "	0.250
3 " "	0.220
4 " "	0.147

The uraemia in this patient was due, primarily, to arterio-sclerosis. In the other case Hosp. No. 6448-22 the uraemia (blood urea nitrogen 112 mgm. per 100 cc., creatinine 10.2 mgm.) was due to a bilateral pyelonephritis with marked suppuration.

Time	Blood Sugar %
Before administration	1.001 Insulin 50 units
1 hour after "	0.958

The patient died before more data could be obtained. The reaction noted one hour after the insulin, however, differed from that of the other case of uraemia in which there was no suppuration present.

These curves obtained from diabetics, complicated by infection, at the time of admission of the patient to the hospital, were no index to prognosis. In 26 such cases including gangrene, carbuncle, abscess, etc. there were only 4 deaths. Sixteen patients were eventually able to do without insulin, dietary restriction alone sufficing. These patients apparently, prior to the complication, were mild diabetics, the pancreatic function being suddenly deranged by infection.

The object of recording these data is to demonstrate that in the presence of infection no routine course can be followed in establishing the dose of insulin. Enormous doses may be required. The amount and frequency of administration during the emergency period is best determined by the frequent (hourly if necessary) estimation of the blood sugar.

Grateful acknowledgement is tendered the Chiefs of the Medical and Surgical Services for co-operation.

## THE PROBLEM OF THE RIGHT ILLIAC FOSSA\*

F. N. G. STARR, C.B.E., M.B., F.A.C.S.

*Toronto*

WHEN a patient presents himself with the classical signs and symptoms of an early fulminating appendicitis, it would be a brave man who would advise delay in operation. The reason for this is that before any signal has been given, the process of inflammation has made considerable progress. One doesn't wait for a rise in temperature, and may be not for an increased pulse rate, if the physical signs are sufficiently manifest. Two of the worst cases that I have seen had not only a normal leucocyte count, but a subnormal temperature and pulse.

Yet we know that some cases recover without operation. Therefore, when such time comes that one is able to differentiate between the acute catarrhal and the acute gangrenous, then one may be able to avoid operation in the former. In the meantime a mistake or any delay may spell disaster to the patient.

The question of so-called chronic appendicitis is quite another matter and requires careful consideration. Is a fibrosed appendix the cause of the symptoms of which the patient complains? Can an appendix that is merely fibrosed cause symptoms? How many times has it occurred to each one of us here that a so-called chronically inflamed appendix has been removed, and in a few months the patient is back complaining of all the old symptoms? Was the diagnosis in such a case justifiable? Was the operation justifiable?

Frankly, I may tell you that hardly a day passes but some patient consults me who has undergone such an operation, and the complaint is that he is not only no better, but that his condition has been aggravated thereby. Personally, I think that such a diagnosis and such a line of treatment cannot be justified unless one can elicit a *definite history of a previous acute attack*.

In order more fully to appreciate this sub-

ject one must go back and study prehistoric man.

In what one might term *the Cellulose Age*, when man's only weapon of defence against the wild animals was a wooden club, he was probably an herbivorous animal, living alone and existing upon fruit, herbs, and roots because he probably had no teeth with which properly to masticate animal food. His cæcum then resembled that of the herbivorous animal of to-day and was long in order that bacterial disintegration of the vegetable fibre might be carried on until it became of use to his internal economy in the form of absorbable nutriment.

In the *Stone Age*, when animal life became more abundant, he developed the use of flint in the form of spear-points and arrow-heads for his own protection. The rudiments of teeth appeared in the jaws.

Later he came to the *Metal Age* and he learned to manufacture bronze, and the sling as a means of protection came into vogue. Then a famine came over the land, and his ordinary food became scarce. Hunger compelled him to eat some of the flesh of the animals slain for his own protection, cooking it in his bronze pots. He liked it and began then to use it as a common article of food. He had found that with quantities of animal flesh ready to hand he could not only satisfy his hunger, but his lust for the kill and his teeth developed, likewise the cæcum shortened as it was no longer required for the bacterial disintegration of vegetable fibre.

With what one might term *the Gas Age* came the manufacture of gunpowder, and with it a further development of the metals, using iron and lead as projectiles. This gave man a still easier method of securing food, and as he became more and more carnivorous his cæcum shortened still further until now normally it is but a small pouch.

Someone here may say that these remarks are a continuation of the "gas age!" If he

\*Read before the Academy of Medicine, Toronto, February, 1924.

does my mission is fulfilled for it will mean that he will not blindly rush in to take out a so-called chronically inflamed appendix without thinking twice!

Evolution as we understand it "makes against instability and disorder, and towards harmony and progress." While "the advance of animal life through the ages has been chequered it has on the whole been an advance towards increasing fulness, freedom and fitness of life."

"The form of civilization is in some measure dependent on the primary occupations, whether hunting or fishing, farming or shepherding; the industries of later ages have a profound moulding effect on the individual." Our task as doctors is to cultivate a progress that will make for fitter folk in body and mind, with improved habits and functions, both at work and at play.

In order to arrive at a still better understanding of the discomfort of the right iliac fossa, let us for a moment briefly study the alimentary tract. The food upon entering the stomach, well-mixed let us hope with saliva, excites the secretion of pepsin and hydrochloric acid and there it is churned about to get it in a fit state to pass on, the stomach being largely only a mixing basin, absorbing but a little water and in pre-prohibition days a little alcohol.

After a couple of hours this well-mixed material begins to enter the duodenum, where it excites the flow of secretin from the duodenal wall, and has added to it the bile and the pancreatic juice. From here it is hurried on to the jejunum and ileum, which are waiting anxiously to abstract the absorbable fluids and send them broadcast through the body for purposes of nourishment.

The residue and left-overs then enter the large bowel and from it probably only the water is absorbed. Such things as cellulose and other material pass on as residue, not being utilized for the cæcum is short. It then comes to the sigmoid where it lodges until practically all of the water has been extracted, and when the sigmoid becomes overloaded, then a small particle drops into the rectum, which, if the rectum has not been abused, as it has been in so many women, telegraphs the desire to defecate. If the proper facilities are provided at

the proper time, the sigmoid then telescopes into the rectum and the daily bowel evacuation is accomplished. What is there in the daily life that gives greater satisfaction and a greater feeling of well-being than this daily defecation. Sad indeed is the case of the man or woman to whom this is an effort.

Another thing to remember in connection with the right iliac fossa is that the cæcum and appendix were not always situated there. In early foetal development you will recall that before the transposition of the mesentery of the large bowel, the cæcum belonged to the left side. As development proceeded it found its way over to the right, under the costal margin; but remember, the mesentery carried with it to the right side its original nerve filaments. Before birth the liver in the foetus enlarges enormously and crowds the cæcum down to and maybe below the pelvic brim, where it remains attached as the liver recedes after birth.

When therefore, we take into account the vicissitudes of the development of man, of the process of digestion, and the thorny path of the development of the cæcum and appendix, it is not to be wondered at that their host is oftentimes made to suffer.

Even if the cæcum be long, falling well into the pelvis, a person may carry on successfully and with a modicum of good health. But let him have an acute illness or an accident which may jar the mesenteries, bringing about an alteration in the neuro-muscular control, then his troubles begin, with complaints of never feeling well, and of a right-sided pain. Under such circumstances don't enter him on your lists as a neurasthenic, or as a case of chronic appendicitis, but begin an elaborate investigation, for in the early stages much can be done to help him by a dietary suited to his digestive ability, as well as by mechanical, medicinal and psychological means.

Of course one must remember that neurasthenia or apprehension may play an important rôle. Recently I operated upon a patient for a ruptured gangrenous appendix, and within a week I was consulted by three of his friends who gave an account of a well studied chain of symptoms similar to those of their friend, but the physical findings would not fit and they

reluctantly returned home with some good advice!

These patients with real trouble in the right large bowel usually come complaining of pain, lassitude, loss of "pep," drowsiness, more marked in the afternoon, loss of appetite, "indigestion," and some nausea. If the symptom of nausea is analyzed, it will be found it has no relationship to the pain and is most troublesome in the early morning. These are the cases that have ileo-caecal regurgitation. Young women often hesitate to mention this. The patient is easily upset nervously, and indeed has often been passed from one to another as a confirmed neurasthenic. Usually they complain also of constipation. In some cases there is mucus in the stools and occasionally blood from an ulcerated area in the cæcum. One case had such a severe haemorrhage that direct blood transfusion was required as a life-saving measure.

A careful physical examination will reveal some tenderness, and under the hand one can often almost grasp a large flabby tumour. I say almost, because just as one thinks he has it, suddenly it is gone. In addition to the tenderness there is frequently hyperesthesia, not only over the right iliac region but also under the left costal border, and there may even be tenderness over the lower left dorsal roots because of the foetal nerve relationships. This is so different from the gall-bladder case and for the reason that the cæcum was originally a left-sided organ.

A barium meal may be given and the average roentgenologist will report nothing abnormal except delay in the cæcum, with failure to empty on the part of the appendix. If he is on to his job, or if you follow the case through the series yourself, you will be struck oftentimes with the size of the duodenum, and in a certain proportion of the cases with what appears to be a "duodenal drag." Watch not only for the caecal delay but watch also for a caecal pocket that may persist for days, and watch also for the ribbon-like transverse colon. The retention in the appendix may mean anything or nothing, mostly nothing, and is by no means a reason for its removal. When this examination is completed and the bowels have been well cleared, then resort to a barium enema. If there is marked atony you will find the haustra

ironed out, and the cæcum appears as a large pear-shaped mass, usually well down in the pelvis, with what may suggest a filling defect in the ascending colon, due to a fan-shaped band to the outer side. Very frequently when the enema has filled the cæcum, you may be able to see the opaque material regurgitate through the ileo-caecal valve. In one of these cases the regurgitation was so marked that in twenty minutes from the time of giving the enema we saw a well marked duodenal cap, and many times when the enema has reached the duodeno-jejunal junction, we have desisted because of the profound nausea produced. This I think gives a clue to the early morning nausea that is a cause of distress in many of the cases, for, with the prone position and the lessening of the peristalsis during sleep, a gradual regurgitation takes place and reaches its maximum with nausea in the morning.

The "duodenal drag," or the distended duodenum, that sometimes is picked up during the x-ray investigation, is caused by the lengthening of the mesentery with an accompanying tortuosity and varicosity of the superior mesenteric vessels, and these in turn make pressure upon, and cause narrowing of the bowel lumen where they cross the duodeno-jejunal junction, which in my opinion is responsible for the frequently associated duodenal distention.

For purposes of treatment we have classed these cases into four groups:

A.—The cæcum may be mobile without much atony, but it produces a drag on the superior mesenteric vessels and thus crowds the duodeno-jejunal junction. One must bear in mind that when the cæcum is mobile and becomes atonic it reverts to that of prehistoric man or to the type of the herbivorous animal. Therefore, meat must be eliminated from the diet. In order to change the bowel flora as quickly as possible from the flora of the carnivorous to that of the herbivorous animal, a yeast cake may be eaten night and morning. Flaxseed added to the diet ensures a daily bowel evacuation. Abdominal massage and physical drill helps, and when in the upright position these patients should wear a corset with an abdominal "lift." When one has not easy access to a good corset-maker, an ordinary abdominal belt with an oblong rubber bath sponge under it serves the purpose admirably. Under such cir-

cumstances the alteration from semi-invalidism to rude health is sometimes very striking. This method of treatment I should say is applicable to well over four-fifths of the patients seen.

B.—Failing to get physical efficiency in this way, in the early mild cases where the cæcum is still an abdominal organ, the removal of the appendix, combined with a plication of the cæcum, after dividing by sharp dissection a constricting fibrous band at the junction of the cæcum and ascending colon over the outer leaf of the mesentery, as well as a sigmoid band fixing the sigmoid to the left broad ligament, is probably all that is required to bring about a cure.

C.—When the cæcum is a pelvic organ, resembling the herbivorous type, and is in a similar stage of atony with marked ileo-cæcal regurgitation, the removal of the appendix with plication of the cæcum and then a burying of the plicated margin into a slit three or four inches long in the posterior parietal peritoneum, leads to a cure. There was no mortality in the first hundred cases when this was done. There have been two deaths in the second hundred, apparently from pulmonary embolus. Afterwards the patients gain in weight from ten to thirty pounds, with increased efficiency and a loss of much of the neurasthenia. Some practitioners have com-

plained that such treatment has destroyed a weekly source of revenue.

D.—In the advanced cases, where there is marked atony with third degree incompetency of the valve, and long continued ill-health, where the appendix has been removed and a subsequent series of adhesion-breaking, health-breaking, and heart-breaking operations has already been done, nothing short of a radical resection of the terminal ileum, cæcum, and ascending colon, with an end-to-end anastomosis of the cut ileum to the ascending colon or to the hepatic flexure as the case may require, will be of any benefit. The extraordinary thing is that nature has some means whereby a partially reconstructed valve develops at the site of anastomosis.

Some years ago we abandoned the side-to-side anastomosis because three cases returned for treatment that had developed pockets in the blind ends, but in adopting the end-to-end anastomosis we ran into occasional faecal fistulae and a higher mortality. In the autumn of 1920 we adopted a piece of rubber tubing as temporary connection at the site of the anastomosis, and since then we have had many cases, with one death, and this was in no way attributable to the operation, nor have there been any faecal fistulae.

---

**Further Notes on the Treatment of Pertussis by the Roentgen Ray.**—Henry I. Bowditch, Boston, presents for discussion the results of treatment with the roentgen ray of 300 cases of whooping cough by the medical staff of the Boston Floating Hospital. The clinical course of the disease under treatment seemed to be modified very definitely. Within a few hours (about eight) after the first treatment, the patient experienced a feeling of relief. The symptoms were reduced in severity and duration. At the end of twenty-four hours, the symptoms usually reverted to their former degree, and the next day no very marked effects from the treatment were noted. After the second treatment, the symptoms usually fell back a little. There were cases in which the severity of the paroxysms was less than after the first treatment. The most marked

changes followed the third treatment. The patient seemed more noticeably relieved—the severity of the paroxysms was reduced, whooping almost disappeared, cyanosis and vomiting became minor factors, and often more uninterrupted sleep at night ensued. By the end of a week, the appetite usually improved, and the patient was much better. Extremes were encountered, cases in which the mother reported cure following one treatment, and cases that persisted with no very marked benefit, in spite of the two courses of treatment. In the entire series of cases, including practically 100 children under two years of age, only one death occurred. Bowditch makes a strong plea to the medical profession and the public to give this form of therapy in whooping cough a fair trial.—*Jour. Am. Med. Assoc.*, May 3, 1924.

## SOME NOTES ON THE OPERATION FOR APPENDICITIS

EDWARD H. WOOD, M.B. (Queen's)

*Peterborough*

MUCH time and thought have been spent on the incisions and proper method of surgical approach to the various organs, and there is still room for improvement in many instances.

This article will deal with the approach to the appendix only. The operation upon the appendix with or without drainage is by far the most frequent of all abdominal operations and any improvement therein should therefore be of such importance as to merit our attention.

Let us first consider the drawbacks of the present methods of approach, *i.e.*, through or around the right rectus or the gridiron incision.

(1) Post-operative hernia; (2) Adhesions of the abdominal viscera to the scar in the anterior abdominal wall; (3) Post-operative haemorrhage; (4) Soiling of an uncontaminated field; (5) Undue handling of the intestines; (6) Incomplete drainage.

It is evident that these are incident largely in cases with drainage, but 1 to 5 are not uncommon in simple appendectomy without drainage and so the remarks herein will cover both types of case, but will be particularly applicable to the case with drainage, and are brought forward in an attempt to overcome these undesirable results.

Adhesions to an incision in the anterior wall would be avoided if the incision were in the posterior wall. Hernia would be lessened if we could get our incision backed up by bony structures and by keeping away from the nerve supply of the muscles—the lower intercostals. Post-operative haemorrhage occurs in the Battle incision with drainage on account of the tube eroding the wall of the deep epigastric vessels or in the gridiron incision from the external iliac vessels owing to the fact that the tube passes over the brim of the pelvis. Soiling of uncontaminated peritoneum could be avoided if none were exposed, as also could undue handling of the intestines and complete drainage obtained by having the drain outlet at the lowest point of the pus collection and depend-

ing on gravity only from there to the surface. To accomplish this would seem ideal and this is the problem which has been undertaken with the result as set down.

Look for a moment at the natural fastenings of the greater part of the contents of the abdomen. The kidneys, stomach, large and small intestines, and omentum are all suspended from the posterior abdominal wall and are free anteriorly. Their movements being in the arc of a circle whose centre is somewhere in the posterior wall while they move freely under the anterior wall.

Now any additional adhesions or the formation of fibrous bands between the viscera and the posterior wall would tend to strengthen these natural and often overtaxed visceral supports. And so from this point of view we should approach the viscera from behind with a dorsal incision. This is done in the case of kidney undoubtedly. But from an entirely different point of reasoning. The kidney is placed in direct contact with, and embedded in the posterior wall, and it is for this reason the surgeon makes a dorsal incision in kidney operations. Can this be carried out in respect to the other viscera?

With a view to this and to overcome the other objections to the present methods some four years ago the following incision was adopted and has been adhered to since in suitable cases, viz., a skin incision in the line of the fibres of external oblique 3 inches to 4 inches in length,  $\frac{3}{4}$  inch to 1 inch inside of the right anterior iliac spine, its centre 1 inch below the spine and the usual muscle splitting operation down to the pre-peritoneal fat. Now instead of incising the peritoneum where it presents in the wound it is stripped off the iliac fossa for a distance of about 2 inches or to within about an inch or less of its reflexion on to the cæcum. The peritoneum and its fat are taken up in forceps at this point and gently pulled up into the bottom of the incision

through the muscles. I must here call attention to two points to be kept in mind: (1) With the centre of the incision as the guide, the line of approach must be straight down, i.e., directly towards the back, deviation toward the head or foot or medially will be apt to lead to difficulties; (2) Do not go too far back in stripping the peritoneum from the iliac fossa or you will get behind the cæcum and not be able to get into the abdominal cavity.

Now the incision is made in the peritoneum. This incision is as close to the appendix as is possible and when it is properly located it is surprising how often the appendix is "right there" when a finger is inserted. The appendix can now be removed without handling or exposing any intestine beyond the cæcum. In case of abscess formation we are opening directly into the abscess cavity and a limited search for the appendix is justified within that cavity.

The necessary treatment of the condition having been performed, the matter of getting out is in order. In simple cases a purse-string about the peritoneal incision and the usual layer to layer closure of the muscles, etc. In case of drainage the tube through the peritoneal wound is at the seat of the trouble and passes directly out of the abdominal cavity. The peritoneal wound if large may be *lightly* closed up to the tube. The outer end of the tube is brought into the *lower corner* of the wound and one or two sutures may be put into the muscle *above* the tube closing them lightly; the same in the case of the skin. This tube is away from all vessels and the patient is put to bed in the extreme Fowler position and drainage is by direct gravity from the cæcal area to the skin. Just a word about the position. By the extreme Fowler position is meant that the ordinary hospital bed be used and that the head be elevated until the patient is at an angle of 30 to 40 degrees with the floor; a

pillow and bandage or some manner of sling is placed under the hips. The split or so-called "Fowler bed" is not satisfactory as the patient slides down and the back arches and drainage is stopped. Russel S. Fowler who practices the principles of his illustrious father, the late George R. Fowler, uses a rack to hold the beds, but I have had no trouble with the beds slipping if the castors are removed and a firm stand to carry the head is used.

Cases in which the peritoneal infection is general will require a supra-pubic stab wound in addition to the one provided.

Going back to the six points wherein an attempt was made to improve on the old incision, I feel that this is at least a step in this direction.

(1) Any adhesions forming as the result of this operation will be so close to the normal attachment of the intestine as to be negligible as far as the cæcum is concerned, but of course is not ideal if a coil of ileum is involved.

(2) Hernia is not likely as our peritoneal opening is backed up by the bony ilium and the drainage opening in our muscle layers are at varying heights.

(3) Post-operative haemorrhage is avoided as the drainage tubes are in contact with no large vessels.

(4) No uncontaminated field has been opened beyond the belly wall and so none is soiled.

(5) In the same way undue handling of the intestine is avoided.

(6) Drainage is complete through gravity from the pericæcal region to the skin (a split rubber tube without a wick is advised).

This incision is not universally applicable. It has the one great drawback that it affords a most localized field (but this is one of its objects) and cannot be used except when the diagnosis is absolute and particular and no further exploration or operation is indicated.

It can be carried out equally well under local or general anaesthesia; in children as well as adults.

---

**Hypernephroma of the Ovary.**—William A. Downes and Leila Charlton Knox, New York, report a case of hypernephroma of the right ovary in a child 3½ years of age. The tumour was re-

moved. Two years after the operation the child appeared to be in perfect health.—*Jour. Am. Med. Assoc.*, April 26, 1924.

## THE MODERN THERAPY OF SYPHILIS\*

H. C. MERSEREAU, M. D., (McGILL) F.R.C.S., (EDIN.)

*Genito-Urinary Surgeon to the Montreal Dispensary, Asst. Genito-Urinary  
Surgeon Montreal General Hospital.*

THE introduction of salvarsan by Ehrlich in 1910 marks the beginning of the modern era in the treatment of lues. Although the early hopes of being able to effect a cure by one *sterilisans magna* have been disappointed, yet the synthetic arsenicals have proved of inestimable value and now occupy the premier place in our anti-syphilitic armamentarium. Since the war a very large number of arsenical preparations have been placed on the market, and recently there have been many bismuth products, chiefly of French origin.

At the present time the differences of opinion regarding the best preparations to use and the methods and periods of their employment are most confusing. We find one clinic employing arsenicals once in one to three weeks, whereas another employs them every day or two; also we find differences of opinion regarding the particular preparation to be used. Some maintain that the original salvarsan or its copies are the most effective while others hold similar views concerning the neo group. Others again advocate still more modern preparations; sodium salvarsan; silver salvarsan; sulfarsenol; gelatin-arsphenamine, and a host of others. Also there are many, especially in Europe, among whom is L. W. Harrison, who think arsenical preparations are best given intramuscularly or subcutaneously, their contention being that the drug is absorbed and eliminated too rapidly when administered intravenously, making the treatment intermittent rather than continuous.

Regarding the comparative value of the various arsenical preparations we must consider:

(1) The therapeutic index, i.e. the relation of the curative to the toxic dose. (2) The convenience and safety of administration.

Schamberg, Kolmer and Raiziss<sup>1</sup> tested various preparations for toxicity and trypanocidal power. White rats inoculated with *trypanosoma equiperdum* were used. They found that for arsphenamine (American salvarsan) the therapeutic index

was 1:21; for neo-arsphenamine it was 1:22; for sodium-arsphenamine it was 1:10.

Strauss, Sidlick, Mallas and Crawford<sup>2</sup>, have investigated the action of silver-arsphenamine as compared with arsphenamine and neo-arsphenamine. Three groups of patients of 25, each averaging much the same as regards age, duration of disease, conditions of general health etc., were treated twice a week for four weeks with graded doses of these three drugs. The comparative value of each was determined by the Wassermann reaction one month after the completion of treatment. Of the 25 cases treated by arsphenamine 13 were serologically negative. Of the neo group 9 were negative, of the silver group only one was negative.

It would appear from the foregoing experiments and many others I have not space to mention, that arsphenamine and neoarsphenamine are much higher in trypanocidal power than sodium arsphenamine and silver arsphenamine.

All drugs of the salvarsan group are put on the market in the form of the hydrochloride, to insure their stability. They therefore must be neutralized before administration. This is accomplished by means of sodium hydrate. As salvarsan has a double molecule, (being built, as it were, around a double benzine ring) it is important that both HCl. groups should be replaced by sodium as, if only one is replaced the mono-sodium salt resulting is very toxic. Salvarsan must be given in a very dilute solution, usually not stronger than 1 in 200 normal saline. This necessitates a very large syringe or preferably, a gravity apparatus, and each injection takes a considerable amount of time.

The neo preparation is already neutralized; it is easily soluble in distilled water and can be given in a 10% solution in a small syringe either intravenously or intramuscularly, although the latter produces considerable local reaction. It is unfortunately not very stable and both its spirochaetocidal power and toxicity vary considerably, sometimes as much as 300% in different lots. It also oxidizes very quickly after being dissolved

\*Read before the Osler Reporting Society, January, 1924.

and exposed to the air. It must therefore be given immediately, so it is necessary to prepare each dose separately. At the same time it is a much more convenient drug to give than salvarsan, and as its therapeutic index is usually about the same it would appear to be the drug of choice for office use or for a small number of patients in a clinic. However, as it does not follow that the therapeutic index of a drug as ascertained by animal experimentation is the exact measure of its efficiency as a spirochaetocide in humans, and as the neo group is notoriously variable and unstable, there is a great deal to be said for the use of salvarsan, especially in clinics where a large amount is dissolved and neutralized at one operation and a considerable time may elapse before it is all administered.

Most of the arsenicals are too irritating for subcutaneous or intra-muscular administration, and the neo group, which are the least irritating of the older preparations, are as already mentioned extremely variable, and oxidize very rapidly. Recently, sulfarsenol and sulpharsphenamine have been introduced. These substances are isomeric and differ from neo-salvarsan chemically in having a higher proportion of oxygen, so that a better name would appear to be oxy-neo-arsphenamine. They are more stable and less irritating, so they may be given subcutaneously as well as intramuscularly or intravenously. Sulfarsenol is used quite extensively in the Royal Navy and seems to have as high a spirochaetocidal power as the other arsenicals; it is much easier to give and is more stab'e than the neo group. It can be given subcutaneously in a 20 to 30% solution.

According to Dr. Voegtlin of the U. S. Public Health Service the average minimum lethal dose of sulpharsphenamine is 400 mgms. per kilo. of body weight (white rats being the animals used for the test,) while the minimum effective dose is about 20 mgms. per kilo. so that the therapeutic index is 1 to 20 or about the same as arsphenamine and neo-arsphenamine. Used subcutaneously the minimum lethal dose was about 500 mgms. while the lowest effective dose was about 25 mgms., making it proportionately as effective as by the intravenous method.

Dr. Voegtlin also carried out comparative tests of arsphenamine, neo-arsphenamine and sulpharsphenamine the latter being given both intravenously and subcutaneously. White rats were injected with trypanosoma equiperdum and trypanosoma counts of the blood made at intervals for 30 days after treatment. The result of these

tests showed that sulpharsphenamine given subcutaneously had the higher percentage of cures.<sup>3</sup>

Another experiment was carried out on rabbits to determine the relative spirochaetocidal power of German neo-salvarsan and sulpharsphenamine. These rabbits were inoculated with Nicholi strain of spirochaeta pallida and after pronounced chancres had been produced some of the animals were given graded doses of neo-salvarsan intravenously and others graded doses of sulpharsphenamine subcutaneously. The lesions were examined for spirochaeta before treatment and all were found positive; they were examined again 24 hours after treatment and were all found negative. It is argued that sulpharsphenamine given subcutaneously is at least as effective as neo-salvarsan employed intravenously. There are also tables showing that the arsenic contained in sulpharsphenamine is more effective as a spirochaetocide than the arsenic contained in arsphenamine or neo-arsphenamine.

Another point to which attention is called is that the maximum trypanocidal effects of sulpharsphenamine occur three or four days after administration, whereas arsphenamine and neo-arsphenamine produce their maximum effects within 24 hours, the former thus producing fewer and less severe reactions and giving a more uniform and continuous medication.

*Gelatin Arsphenamine.*—The researches of Oliver, Yamada, and Kolos,<sup>4</sup> into the reduction of the toxicity of arsphenamine by combining it with the hydrophil colloids, especially gelatin, seem to show that toxicity is very much lowered by this means, the minimum lethal dose being increased from 10 gm. per kilo to 15 grm. per kilo, a reduction in toxicity of 33.1-3%. When arsphenamine is injected into the blood there occur the following changes.

1. Agglutination of the red blood corpuscles.
2. Haemolysis.
3. Incoagulability of the blood, which results from the action of the drug on the fibrinogen.

In such animals the arsphenamine can be demonstrated analytically to be bound to the cells and plasma proteins. An animal may be killed by an enormous dose of gelatin arsphenamine, the death being due to circulatory failure, but in such animals none of the characteristics of physical toxicity can be demonstrated. A subsequent series of experiments by the same investigators showed that the trypanocidal power of gelatin arsphenamine was not diminished *pari*

*passu* with its toxicity but remained much the same as that of arsphenamine.<sup>5</sup>

These preparations, sulpharsphenamine and gelatin arsphenamine, have not as yet been tried out sufficiently for one to speak definitely concerning them, but if the later results are even approximately as good as those already obtained the treatment of syphilis bids fair to be revolutionized, being made simpler, quicker and safer and free from the lamentable accidents that sometimes follow intravenous administration of the preparations now generally in use.

*Tryparsamide.*<sup>6</sup>—The foregoing arsenicals are designed chiefly for use in the earlier stages of syphilis and are not so effective in late and nervous cases. A preparation called tryparsamide is being introduced by the Rockefeller Institute for Medical Research. This drug is the sodium salt of N-Phenyl-glycine-amide-p-arsionic acid. It has passed through the animal experimentation stage successfully and is now being used clinically by a few selected observers. The therapeutic index of this drug is comparatively low being only about one third that of arsphenamine or neo-arsphenamine. However, it owes its therapeutic effects to the power it possesses of permeating the tissues and reaching organisms that are beyond the reach of the ordinary arsenicals. It is therefore supposed to be very useful in late and neuro-syphilis and is said to produce excellent results in general paresis, which up to the present has not been amenable to any extent, to treatment by the arsenicals. In this disease there are large numbers of spirochaetes in the central nervous system and tryparsamide is supposed to have the power of reaching and destroying them. Another characteristic of this drug which has a rather important bearing upon its employment is that it causes increased weight and activity and improved general health, which is not the case with the arsenicals generally in use at present in the treatment of lues. It is usual to have patients lose considerable weight during a course of treatment and not recover it until the rest period.

*Mercury.*—With the use of mercury everyone is of course familiar so only a few words will be necessary here. The use dates back far into the middle ages although regular physicians did not employ it until the end of the 15th century. Nowadays it is given intramuscularly almost exclusively, excepting in very young children to whom it is given by inunction, and in those cases who refuse to have intramuscular injections,

when it may be given by inunction or intravenously. Soluble and insoluble preparations are used. Of the former the chloride, the iodide and succinamide, are mostly used, and of the latter the salicylate is most popular. The soluble salts must be given frequently, *i.e.*, every two days or so, owing to their rapid absorption and elimination and this is often very inconvenient for the patient owing to the frequent visits to the physician and the pain that often follows the injection. The salicylate can be given once weekly in 1 to 2 grain doses. The vehicle generally used is vegetable oils, with a certain amount of local anaesthetic such as chloretone or creasote to allay the pain, which is generally not great, providing the injection is made actually into a muscle and not subcutaneously into the intermuscular spaces where nerves and vessels may be encountered, or into dense fibrous tissue. Grey oil which is a preparation of metallic mercury is still often employed for intramuscular injection. In intravenous use Parke Davis & Co. manufactures mercurosal, a synthetic mercury compound which seems to produce good results, although it is as yet comparatively new.

*Potassium iodide.*—Potassium iodide was first used by Wallace of Dublin in 1834. It is not a spirochaetocide but is supposed to aid in the absorption of fibrous tissue, in fact it has been proved to cause the disappearance of gummatous tissue. As one of the earliest changes caused by the spirochaeta pallida is the formation of fibrous tissue, and the difficulty of curing old cases is probably largely due to the spirochaete being protected by a wall of fibrous tissue through which the spirochaetocidal drug cannot penetrate, it would seem reasonable to employ iodides in all cases of lues excepting perhaps the early primaries. It is not uncommon to see a primary sore heal under salvarsan only to break down if the treatment is discontinued, showing that all the organisms at the site of the lesion had not been destroyed by even several injections of the drug. Perhaps iodides would facilitate the destruction of these organisms; the also question of excision of primary sores arises in this connection. It would seem that the patient would at least be no worse off after the excision and might be a great deal better.

*Bismuth.*—Bismuth was first used in the treatment of syphilis by Masucci and Balzer in 1889 the proto-iodide being employed. Since then there has been a great deal of work done with this drug. At the present time there are a large

number of preparations on the market, the chief of these being trepol, neo-trepol, muthanol, quinby and also the colloidal bismuths such as bismuthoidal which can be given intravenously as well as intramuscularly, the latter being the method of employment for the others. It is claimed that bismuthoidal is less irritating, more easily absorbed and has greater spirochaetocidal powers than the others. At the Montreal General Hospital it has been found that a few Wassermann-fast cases have become negative after 10 or 12 injections of neo-trepol but for the most part the results have been disappointing, although it is too early to be able to form an opinion as to its ultimate value. It is not fair to assume that because every old Wassermann-fast case does not become negative after one course of bismuth, the drug is without value. The fact that even a few have become negative after one course seems to me to be very encouraging.

At the Montreal Dispensary I have had one case of long standing syphilis, with pain and weakness of the legs, positive blood Wassermann, and negative cerebro-spinal fluid. This man had been unable to do any work for months and was steadily getting worse in spite of treatment with novarsenobenzol, mercury and potassium iodide. He was put on bi-weekly intramuscular injections of neo-trepol and began to improve from the first. Before he had half finished his course he was back at work feeling as well as he had ever felt. He is still at work at the present and feeling well.

My colleague Dr. Conover reports a case of severe lightning pains of early tabes, which were completely stopped by one injection of neo-trepol. There seems to be a field for the employment of bismuth in the later stages of syphilis especially in Wassermann-fast cases which are hypersensitive to or do not respond to arsenic or mercury.

The question now arises how often are the arsenical preparations to be used and should mercury be given with them?

*Treatment at Mayo Clinic.*—There is the widest divergence of views on both of these points. In the Mayo Clinic for example, arsenobenzol is given every second day for four doses, in early cases, during which period the patient is kept in bed. He then leaves hospital and is given mercury intramuscularly for 5 weeks (mercury succinamide five doses per week and mercury salicylate one dose per week). This is followed by one week's rest without treatment, after which

a second course is given, the same as the first, and so on. Needless to say this is very heroic treatment and patients must be closely watched for complications. Many patients have declared that they would rather have the disease than the cure.

*Treatment at the Montreal General Hospital.*—Here mercury salicylate is given intramuscularly during the arsenical (diarsenol) course. The first course of treatment (the intensive course) is given every week, diarsenol on the 1, 3, 6, 9, 12 and 15th weeks, and mercury salicylate on the 2, 4, 5, 7, 8, 10, 11, 13 and 14th weeks.

Commander Scott who is the genito-urinary expert of the Mediterranean Fleet states<sup>7</sup>: "When we compute an arsenical course at 4 grammes it is not because we consider this enough in all cases but because we do not consider it safe to give more. Arsenic taxes both the liver and kidneys and we know that mercury can damage the latter. If the excretory system is inefficient arsenic becomes dangerous. If mercury is given arsenic must be reduced, and as the latter is infinitely more powerful as a spirochaetocide such reduction is illogical. Why fiddle about with bad tools when better are available? For the same reason mercury should not be employed between arsenical courses—this period is for rest. It is most undesirable to plant a second arsenical course on a wearied excretory system." He goes on to say: "If a course of 4 grammes is spread over such a long period as 14 weeks it is probable that mercury is not harmful but these long and mild courses bear the stamp of latency producers. Mercury should be reserved for the old cases, the failures of a better treatment."

With all respect to the gallant Commander there is another point of view which deserves consideration. It is generally recognized that mercury, while inferior to arsenic as a spirochaetocide *en masse*, and slower in its action, yet has a certain power of permeating tissue that arsenic does not seem to possess. Arsenic has been compared to a barrage of shrapnel from field guns which quickly destroys all troops in the open but cannot reach those in the trenches and dug-outs. Mercury is comparable to the bombers and bayonet men who follow up the barrage and proceed to "mop up" the trenches and dug-outs and kill all the enemy who occupy them. According to this view a prolonged bombardment with arsenic only makes the inaccessible spirochaetes dig themselves in more securely so that it is necessary to use mercury as a "mopper up"

between barrages. This is the idea behind the continued treatment with both arsenic and mercury.

I have examined the records of several hundreds of cases at the Montreal General Hospital and Dispensary, and it is very rarely that a primary or secondary case fails to clear up both clinically and serologically under combined arsenic and mercury treatment, the failures being mostly due to interrupted treatment. I think the results from the combined treatment are quite as good as those from the use of arsenicals alone, and at any rate it does not seem wise to abandon a remedy which has proved its usefulness for so long a time in favour of one which is as yet, after all, more or less a trial.

To conclude this rather general discussion of the subject I will read a summary of a paper by Solomon of Harvard<sup>8</sup> on the treatment of neuro-syphilis: "The problem is to destroy the spirochaetes in the nervous system. The nervous tissue is walled off from the general body structures and this leads to a relative impermeability of drugs placed in the general circulation. However, some penetration does take place, the amount apparently varying in different individuals. Some cases react well to mild systemic treatment, others require more intensive treatment. There are many however who do not react to systemic treatment with arsphenamine, mercury or iodides. Some of them do well when medicaments are given directly into the cerebro-spinal fluid (Swift Ellis' treatment) or when special drainage is used. Theoretically, it seems advisable to place the medicament as near the site of patho-

logical change as possible, utilizing the lumbar subarachnoid space, the region of the cisterna magna and the ventricles as conditions indicate. It is more difficult on the whole to get satisfactory results in cases of tabes and general paralysis than in the cases of the meningo-vascular type; the former usually require quite intensive treatment. There still remains a group of cases that cannot be satisfactorily modified by treatment with arsenic mercury, iodides or blood serum.

The immunity of the patient plays a large rôle in the results obtained and various procedures that may increase the immunity responses have a place in the treatment of neuro-syphilis. Some favourable reports have been made of the results obtained from inducing febrile reactions by inoculations with malaria and relapsing fever. The hopes for the future rest either on the methods of inducing greater immunity on the part of the patient, or on the discovery of drugs with greater power of permeation into the nervous system, such as as tryparsamide."

#### REFERENCES

- (1) SCHAMBERG, J. F., KOLMER, J. A., AND RAIZISS, G. W., The Toxicity and Trypanocidal Activity of Sodium Arsphenamin, *J.A.M.A.*, June 25th, 1921, pp. 1823.
- (2) STRAUSS, SIDLICK, MALLAS AND CRAWFORD, Therapeutic Index of Silva Arsphenamin, *J.A.M.A.*, March 4th, 1922, pp. 632. (3) Reprint No. 797 from the Public Health Reports, *U. S. Public Health Service*, November 10th, 1922.
- (4) OLIVER, J., YAMADA, S. S., AND KOLOS, F., Biologic Reactions of Arsphenamin: Reduction of its Toxicity, its combination with Hydrophil Colloids, *Arch. of Derm. and Syph.*, July, 1923, pp. 1.
- (5) Venereal Disease Information, *U. S. Public Health Service*, September and October, 1923.
- (6) BROWN, W. H., AND PEARCE, L., Tryparsamide; Its action and Use, *J.A.M.A.*, January 5th, 1924, pp. 5.
- (7) Venereal Disease Information, *U. S. Public Health Service*, August, 1923.
- (8) SOLOMON, H. C., The Treatment of Neuro-syphilis, *J.A.M.A.*, November 24th, 1923, pp. 1742.

---

**Carbon Tetrachlorid Poisoning.**—B. M. Phelps, Almirante, Panama, and C. H. Hu, Boston, report two fatal cases of carbon tetrachlorid poisoning with their important pathologic findings, and also a series of animal experiments that tend to confirm the general view already held that carbon tetrachlorid may cause central necroses of the liver, and suggest that the same drug may cause necrosis of the suprarenal cells. In the two fatal cases of carbon tetrachlorid poisoning reported, the chief pathologic finding was central necrosis of liver. In one case, the suprarenal glands showed necrosis of the cortical cells. The

suprarenal glands of the other case were not preserved. Carbon tetrachlorid produces central necrosis of the liver and necrosis of the suprarenal cortex in guinea-pigs. Regeneration of liver cells following central necrosis is very rapid. It is suggested that the symptoms following ingestion of the drug in human cases are probably associated with the presence of central necrosis of the liver, and the absence of this lesion in the previously reported cases is probably due to the rapid regeneration of the liver cells.—*Jour. Am. Med. Assoc.*, April 19, 1924.

## PROPHYLAXIS IN OBSTETRICS, WITH SPECIAL REFERENCE TO THE VALUE AND IMPORTANCE OF PRE-NATAL CARE

JOSEPH N. NATHANSON, M.D.

Ottawa

THE dominating feature of the science and art of medicine in all its branches as taught to-day is, and should be, that of prophylaxis. No one who is at all interested in the welfare of humanity, can question the wisdom of such a doctrine. Furthermore, this should be developed to such a high degree, as to inculcate into the members of the medical profession, as well as laymen, the responsibilities of the former, and the desirability of the co-operation of the latter, in preventing the occurrence and spread of disease.

In the whole domain of preventive medicine none, in the opinion of the writer, deserves greater attention, more intensive study, and a more accurate conception as to its extreme importance, than that of the welfare of the prospective mother and her offspring. Viewed from the economic and sociological as well as the purely scientific standpoint, she is deserving of the highest consideration, for if the unborn child is to survive, and not contribute to the existing excessive rate of infant mortality, the prospective mother must first be brought to the highest possible degree of physical efficiency during her pregnant state. Pre-natal supervision, therefore, of the gravid female, is one of the most practical applications of modern preventive medicine, and is one to which the general practitioner can contribute to a very material degree.

In her exhaustive investigation which Grace Meigs undertook into the mortality from childbirth, it was clearly brought out what a vast improvement must be forthcoming in order to materially reduce the mortality from pregnancy and the puerperal state. A condition which is responsible for between fifteen to twenty thousand maternal deaths annually, in the registration area of the United States alone, not to mention an equally high morbidity, and which next to tuberculosis, ranks as the highest death rate, and outnumbers the

deaths from heart disease and neoplastic diseases, for the female population during the child-bearing period, must certainly be regarded with grave concern, especially as it affects our female population between the ages of fifteen and forty-five.

In an effort to arrive at a relative, if not absolute conclusion, it appeared to the writer that it might be profitable to examine the histories of the near female relatives of a large number of applicants for life insurance. To that end, through the courtesy of Mr. S. C. Tweed, and Dr. W. L. Hilliard, president and medical director, respectively, of the Ontario Equitable Life Insurance Company, the histories of five thousand applicants, both accepted and declined, were carefully examined; and I here desire to express my deep appreciation to both these gentlemen for their ready co-operation and interest in this analysis.

Careful study of the family histories of these five thousand applicants revealed a very striking condition as to the place which childbirth occupies as a cause of mortality among women during the child-bearing period. From the accompanying table, it will be seen that of the five thousand applicants, two hundred and forty-six had a mother or sister or both who died from childbirth; one hundred and forty-nine died from tuberculosis; and one hundred and thirty-two from neoplastic diseases. In other words, the mortality from childbirth among the near female relatives of the applicants was almost equal to that of the combined mortality from tuberculosis and cancer. The significance of these figures is particularly striking when one considers that these deaths from childbirth occurred, in the great majority of cases, within the past fifteen to twenty years; a period in which the death-rate from typhoid fever, malaria, diphtheria, etc. has been markedly reduced.

Much as we may desire to juggle these figures, the fact remains that there are certain pre-requisites which every physician must

*Table Showing Mortality of Near Female Relatives of Five Thousand Consecutive Applicants in the Ontario Equitable Life and Accident Insurance Company*

Relative	Mortality from Childbirth	Mortality from Tuberculosis	Mortality from Cancer
Mother only	143	54	112
One sister only	95	76	17
Two sisters only	4	8	...
Three sisters only	1	2	...
Mother and one sister	3	7	3
Mother and two sisters	...	2	...
Total	246	149	132

fulfil before the function of childbearing can be consummated to a successful termination with a minimum of risk and the maximum of success. *A priori*, every physician who assumes the responsibility of looking after a pregnant woman, must be prepared to exert every possible effort at his command, and the best of his skill, in order that she may be guided by him through a most important epoch in her life. Above all, he must not only know when and how to interfere, as the emergency arises, but also when *not* to interfere, for "meddlesome midwifery" is one of the greatest dangers surrounding the practice of obstetrics to-day. Harrar has tersely expressed it when he says that "Patience in obstetrics is next to asepsis, but it must be the active patience of close observation; not the passive patience of ignorance, allowing the mother to become totally exhausted, or the baby in imminent peril of death before determining on a line of action."

Realizing, therefore, as Davis states, that the present maternal mortality is the greatest medical crime of to-day, the question naturally arises what factors should be utilized to reduce it from practically the same figure where it stood seventy years ago to the irreducible minimum. To that end it seems logical to carry out in a systematic and aggressive manner, the education of the public, and to invite the most

active co-operation of the physician; and these will be dealt with more fully in the succeeding pages.

Primarily, the public must be taken into the confidence of the medical profession, and taught in a practical manner how much can really be accomplished by proper pre-natal care, and by the practice of clean obstetrics associated with reasonable skill, for as Pomeroy has aptly put it, too many women of all classes "select their obstetricians as they select their bridesmaids."

From a fair experience obtained by the writer in private practice and in the pre-natal clinic, it has become very evident that much can be gained through the exercise of sympathetic tact; and once having won the patient's confidence, the value of pre-natal care to herself as well as her unborn child, can easily be brought out, and having accomplished this, the patient invariably shows a desire for co-operation even beyond our most sanguine expectations.

In addition, increased and more adequate hospital facilities for obstetrical patients must be forthcoming, in order to impress upon our women that the hospital is after all the safest place in which to be delivered, especially is this applicable in the case of every primipara, irrespective of her social status, or her financial resources. Polak, in his usual clear manner has shown that it is the middle class of women who make up the sixty-one per cent. of gynaecological patients who suffer directly from the result of poor obstetrics.

In undertaking the care of a pregnant patient, all will agree that the physician is dealing with a very important branch of medicine; for who will deny the fact that it is infinitely more difficult to treat two patients than one? Nevertheless, in many cases, physicians do not regard the care of their obstetrical patients with as much importance as they do even a minor surgical condition. The reason for this is really paradoxical, for it is at one and the same time both easy and difficult to ascertain. Usually the average patient is given too little pre-natal care. The physician in many cases overestimates his own abilities, and does not recognize the limitations of his knowledge, or the extent of his qualifications, while

at the same time, the responsibility which he owes to the prospective mother and her child are very much underestimated.

When a woman presents herself to us after she has become pregnant, she should be impressed with the idea that until she has given birth to her child, and the generative organs have gone through the period of involution, her physician holds himself in constant readiness to render her whatever assistance or advice she may desire or be in need of. He should not wait for her to volunteer subjective complaints, but rather must he be on the *qui vive* for all those abnormal deviations which may and do occur so often during pregnancy and the puerperium. The physician, therefore, must gauge each case according to its exigencies as the occasion arises, in order thereby to stave off any unpleasant or threatening complications.

At the very outset the patient should be instructed as to her personal hygiene, the type of housework which she may carry on, her mode of living, the recreations in which she may indulge, etc., and if on interrogation, any or all of these should be found to be faulty, then it is incumbent upon the physician to rectify them, and thus avert any untoward results which not infrequently may be productive of much harm. In short, sustained and active watchfulness, combined with thorough and painstaking investigation of each particular case, should be the uppermost thought in the mind of the medical attendant. If his patient can only be impressed with the idea that her personal comfort and interests are being carefully looked after by her physician, active co-operation by her will be his lot, and instead of being characterized as a drudgery, obstetrics will be elevated to the dignified plane which it so justifiably deserves.

Coming now to the purely medical side of pre-natal care, the patient on her first visit should be closely questioned as to her past history, with special emphasis upon the occurrence during childhood of any of the acute exanthemata, particularly scarlet fever, and also as to the possible occurrence of acute rheumatic fever. A history of these diseases should immediately place the physician on guard as to their possible effect upon the existing pregnancy, with its added burden of

metabolic activities. Similarly should the patient be interrogated as to the occurrence of venereal diseases, for it is now universally agreed that the early detection and intensive anti-syphilitic treatment during pregnancy is productive of markedly beneficial results, especially from the standpoint of the offspring. A history or suggestion of rickets should also forewarn the physician as to the possible existence of a malformation of the pelvic girdle. In short, a thorough and carefully obtained history often discloses to the medical attendant the possible abnormalities which may affect his patient, or confront him during her pregnancy; and to be forewarned in obstetrics, as in any other branch of medicine, is to be forearmed.

Following the history, the patient should be subjected to a careful and very thorough physical examination, and this should not be conducted with a biased mind simply because she presents herself to her physician to engage him for her delivery. Rather, should he direct his attention to the various extra-genital systems, in order to detect, and if possible correct, any abnormal conditions affecting them. Foci of infection should be carefully looked for, particularly in the teeth and tonsils, for the work of Talbot in this direction promises to be productive of valuable information as a possible etiological factor in the production of the toxæmias of pregnancy.

The cardio-vascular system should be thoroughly investigated, and the condition of the myocardium should be estimated in order to determine its ability to withstand the strain of pregnancy and labour. It is needless here to go into an exhaustive discussion of the treatment of cardiac disease complicating pregnancy, except to point out that the mere detection of a murmur should not stamp the patient as an advanced cardiopath, and therefore submit her to the dangers of Caesarean section, or other of the fads practised on the most flimsy of excuses, by the radical element among obstetricians. The presence of pulmonary tuberculosis should be carefully looked for, and if present, must be treated along the lines usually advocated by those who are pre-eminently qualified to offer authority on this phase of the subject. The excretory systems should be investigated, and if not functioning properly should of course be assisted by the institution

of adequate measures. The blood pressure should then be taken, and a careful urinalysis performed to exclude the presence of any abnormal findings.

Having satisfied himself that the patient is to the best of his knowledge free from any gross disease, the physician should then perform a careful abdominal and pelvic examination, which should include accurate pelvimetry, both external and internal, in order to estimate the relation which exists between the foetus and the pelvis, and the capacity of the latter to allow the birth of the child with safety to itself, and without extensive and irreparable damage to the maternal soft parts. If any borderline degree of contraction is detected, then it should be insisted that the patient be delivered in a properly equipped maternity hospital, where every safeguard is at the disposal of her attendants, thus assuring a successful result. On the other hand, should there be present such a gross malformation of the pelvic girdle as to preclude the delivery of a living child *per vaginam*, then the patient should be stamped as one for an elective Caesarean section, which can thus be performed with the greatest possible safety, rather than exposing her to repeated vaginal examinations, unsuccessful attempts at instrumental delivery, and finally terminating in a dead baby, a damaged mother, and not infrequently death from shock or sepsis.

Other conditions to be looked for, are the presence of pelvic tumours, the existence of gonorrhoea and syphilis, malpositions of the uterus, the possibility of extra-uterine pregnancy, etc., any of which if detected, should be treated along proper lines. Having arrived at a stage where he has as it might be termed a complete invoice of his patient, and having satisfied himself that she will in all probability pass through a normal delivery, the physician's only concern is to guard against toxæmia, to note the possibility of some abnormal presentation of the foetus, and to be constantly on the lookout for abnormal situations of the placenta.

The question is frequently asked, how often should the patient be seen during pregnancy? Given a woman who, after careful examination can be stamped as a normal case, it is the writer's custom to advise the patient to present herself every month up to the fifth month, every

three weeks up to the seventh month, and every two weeks from then on, until labour begins. At each visit, the blood pressure should be taken and the urine examined for albumin or other abnormal contents. In addition, the patient should be questioned as to the condition of her bowels, and particularly as to the presence of any abnormal complaints, such as headache, swelling of the feet, gastric and ocular disturbances, and disturbances in the urinary function. Any of these, if present, should be immediately investigated, and appropriate treatment instituted by measures designed to ameliorate them and bring the patient back to a normal condition. From the standpoint of the child, a routine Wassermann test is now generally conceded to be a valuable measure to detect the presence of latent syphilis in the mother. The fetal heart sounds should be counted at regular intervals from the seventh month up to term, in order to detect any alteration in its rate or rhythm. If an abnormal presentation is found, then of course an attempt should be made to rectify it, and if possible to maintain it in the normal position.

If the physician will conduct every case of pregnancy along the lines indicated above, then he will be fully informed as to the condition of his patient at all stages of her pregnancy. Repeated investigations by reliable workers have shown that the toxæmias of pregnancy and puerperal sepsis are the greatest contributing causes to maternal mortality, and until study and research have revealed the exact cause of toxæmia, the profession must rely upon watchful and thorough pre-natal care to bring about the desired reduction in the morbidity and mortality from childbirth.

In conclusion, the tremendous responsibility which rests upon the medical profession in respect to pregnancy and its associated conditions, can perhaps be best emphasized by recalling what Oliver Wendell Holmes wrote in 1843, in his epoch-making essay on the "Contagiousness of Puerperal Fever." That this pioneer physician must have been keen enough to appreciate the value and importance of pre-natal care, even if not expressed in such a term, is clearly conveyed by the following words. "The woman about to become a mother, or with her newborn infant upon her bosom, should be the object of trembling care and sympathy wher-

ever she bears her tender burden or stretches her aching limbs. The very outcast of the streets has pity upon her sister in degradation when the seal of promised maternity is impressed upon her. The remorseless vengeance of the law, brought down upon its victim by a machinery as sure as destiny, is arrested in its fall at a word which reveals her transient claim for mercy. The solemn prayer of the liturgy singles out her sorrows from the multiplied trials of life, to plead for her in the hour of peril. God forbid that any member of

the profession to which she trusts her life, doubly precious at that eventful period, should hazard it negligently, unadvisedly, or selfishly."

#### REFERENCES

- DAVIS, CARL HENRY, *Surg. Gyn. and Obs.* Mar., 1920.  
 HARRAR, JAMES A., *Am. Jour. Obs. and Gyn.*, Mar., 1923, vol. v, No. 3.  
 HOLMES, OLIVER WENDELL, *Harvard Classics*, vol. 38, p. 264.  
 MEIGS, GRACE L., *U. S. Dept. of Labor, Children's Bureau, Miscellaneous Series 6*, Bureau Publication 19, 1917.  
 POLAK, JOHN OSBORN, *New York State Jour. of Medicine*, Aug., 1923.  
 POMEROY, R., *Transactions Am. Gyn. Soc.*, 1921, vol. xxxvi, No. 39.  
 TALBOT, JOHN F., *Jour. Am. Med. Assoc.*, Mar. 27, 1920, vol. lxxiv, p. 874.  
 TALBOT, JOHN F., *Boston Med. and Surg. Jour.*, Vol. 180, No. 17 p. 462.

### A CASE OF GALACTORRHoeA\*

A. T. CAMERON, F.I.C., F.R.S.C., H. J. FERRIER, M. D., AND P. H. T. THORLAKSON, M. D.,  
 C. M., M.R.C.S., L.R.C.P.

(From the Department of Biochemistry, Faculty of Medicine, University of Manitoba, and the  
 MacLean-Gunn Clinic, Winnipeg)

**G**ALACTORRHoeA is defined by the medical dictionaries as an excessive flow of milk, and by authoritative texts as a continuous flow of milk from the breast after the usual period of lactation. The two definitions are obviously significantly different. The use of the first is illustrated in a recent paper by Hinselmann, who refers to twenty cases seen in eight weeks, and all cured with special binders.

Accepting the latter and more correct definition, galactorrhoea is extremely rare, of unknown etiology, and with doubtful treatment. DeLee has only seen one case in his extensive obstetrical practice. This continued four years, the milk disagreed with the children so that they had to be wet-nursed, while recovery occurred when a small abscess near the nipple was opened. DeLee states that return of menstruation usually is accompanied by cessation of flow, and says further, "If I should meet another case I would use mammary extract and corpus luteum experimentally." Since the effect of corpus luteum and mammary extract injections is to increase milk flow, this suggests the application of "a hair of the dog that bit him." DeLee says further that the disease is more frequent in neurotic women, and in some cases abnormal practices on the breasts may be suspected if simulation and exaggeration are eliminated.

We have been able to find nothing published as to the composition of the secretion, though Berkeley describes it as "pale watery milk." He states that "the amount lost *per diem* amounts to a considerable quantity. The breast in many cases presents no external signs of great activity, indeed, it is often quite flaccid. Usually only one breast is affected. . . . The fluid is of little nutritive value."

The following case presents a number of marked differences from DeLee's and Berkeley's descriptions. The milk resembled a thick cream, though it certainly was of problematical nutritive value. Both breasts were affected, and both showed marked signs of activity. There was no evidence of any abscess formation nor chronic inflammation in either breast. Return of menstruation was not accompanied by cessation of flow.

X-ray treatment gave immediate results.

The chemical study was incomplete, because since the patient resided at some distance from Winnipeg and wished to return home as soon as possible, X-ray treatment was applied after only a small amount of milk had been obtained for analysis, and this treatment immediately stopped the milk-flow. Nevertheless the chemical composition is so unusual, that even allowing for considerable variations it suggests marked abnormality of the secretory cell function. It is fur-

ther to be remarked that examination of the minute amounts of milk later available as the effects of the X-ray treatment passed off suggested that this treatment had induced a return towards a more normal secretion.

*Case History.*—Mrs. K., aged 25 years, white race, Canadian nationality (three generations).

*Primary Complaint.*—1. Persistent and continuous discharge from both breasts for over two years. 2. Enlargement of and pain in both breasts.

*Secondary Complaint.*—Slight bleeding from rectum.

*Family history.*—Three brothers, all healthy, no sisters, mother healthy but inclined to be stout.

*Previous history.*—Ruptured appendix drained 1914. Married at 21. No miscarriages nor abortions. Only child now two years old. Menstrual periods 28-3, always scanty, with occasional pain. Repair of incisional hernia during pregnancy, 1921. Birth of child, January, 1922.



*Present illness.*—The child was breast-fed for two months, but became sick, lost weight, and was vomiting. It was weaned as the mother's milk is stated to have been of a greenish colour. The baby's health immediately improved with artificial feeding. The mother's breasts are still large, painful, and have not ceased to discharge milk. She has used tight binders, with belladonna lotions, etc., without benefit. Menses began one month after confinement, and have been regular and normal. She has no digestive symptoms. Her bowels are regular, her appetite large.

No history of abnormal sexual desire, nor of

sexual perversion, could be obtained. Her husband left her four months ago. She claims she has been absolutely virtuous. She has worked as a clerk recently, and could work a full day without being more tired than others.

*Initial examination.*—A healthy looking woman, weight 171 lbs., height 63 inches. Has gained 13 lbs. in 5 years, but only weighed 140 lbs. after birth of the child.

Pulse 76, B.P., 115-73. Heart and lungs, teeth and throat normal. Breasts large, pendulous, and tender (see photograph), excreting so much milk that in spite of pads and dressings her clothes became soaked. The flow from the nipples looks like normal milk. Abdomen, operative scar, otherwise negative.

Examination by rectum reveals rectal polypus protruding and bleeding. (This was subsequently removed under gas anaesthesia, January 31st., and found to be an adenoma). Examination by vagina reveals a bilateral tear of cervix. Slight erosion. Uterus normally antiflexed. Adnexa negative. Basal metabolic rate +9 per cent. X-ray of sella turcica revealed no abnormality. Wassermann negative.

#### *Chemical examination:*

*Blood.*—A sample was obtained on February 4th. Glucose 0.10 per cent; urea-N 14.1, uric acid 4.6, and creatinine 1.4 mg. per 100 c.c. The figure for uric acid is slightly high, the remaining results normal.

*Urine.*—A 24-hours' specimen was collected February 3-4. This was pale yellow, clear, sp. gr. 1.030, neutral, and 600 c.c. volume. Analyses showed: Urea-N 4.75 gm., NH<sub>3</sub>-N 0.26, total-N 7.71, P<sub>2</sub>O<sub>5</sub> 0.29, NaCl 7.50, creatinine 0.88, creatine (as creatinine) 0.15 gm. Sugar, albumen, acetone bodies, were all absent, diazo-reaction negative, indican slight.

During the period of collection she ate no breakfast on either day, and on the 3rd. ate for dinner cold beef, bread and butter, and two small fruit biscuits, and for supper some cooked meat and bread and butter. During the whole period of collection she drank three cupfuls of water and half a cup of tea. Except for phosphates, her urine appears normal on this light diet.

*Milk.*—A small sample was obtained on February 1st., from the untreated breast (see below), and amounted to about 8 c.c. It was of usual colour, and of the appearance of cream, had a normal microscopic appearance, and was alkaline to litmus. Analytical results are shown in the following table, contrasted with normal hu-

man milk, and with that of the bitch, and sow, taken from the standard tables. The figures (except specific gravity) are expressed in grams per 100 grams of milk.

The specific gravity was determined accurately

February 19th. The breasts were appreciably smaller. Only one c.c. of milk could be obtained with a good breast pump. She had had no pain, and never enough oozing to soil clothes, even without a pad.

	Mrs. K.	Normal human milk		Bitch	Sow
		1-9 months	10-20 months		
Sp. Gr.	1.039	1.028—1.034			
Solids.	17.4	12.2	12.2	24.6	17.6
Ash . . .	0.2	0.21	0.21	0.7	1.1
Protein . . .	10.3	1.15	1.07	9.9	6.1
Fat . . .	6.4	3.26	3.16	9.6	6.4
Lactose . . .	0.9	7.50	7.47	3.2	4.0
Total creatinine . . .	0.0067	0.0026—0.0037			

with a small pyknometer. Solids and ash were determined in the usual manner. Meig's method was used for fat, and Myer's for lactose. Protein was calculated from the total-N (1.62 per cent.) using the factor 6.37. An attempt was made to check the protein value with a small amount of milk available after the other determinations, by precipitating with sodium tungstate and sulphuric acid. The protein-precipitate referred to the original milk showed total N 1.21 per cent., whence protein 7.7, while the filtrate showed total N 0.54 per cent. Hence the figure given for protein is probably a little, but not very much too high.

The abnormal composition of this milk is apparent, though obviously no definite conclusions can be drawn from these results as to the composition at the time the baby ceased being breast-fed.

*Treatment.*—January 31st. Right breast treated with x-ray 40 milliamperc minutes at 75 kilo-volts, 10-inch distance, with 4 mm. aluminium filter. The pain was relieved on this side the next day.

February 1st. The left breast was treated, using the same dose.

*Progress.*—February 4th. As we were desirous of obtaining another sample of milk for analysis, both breasts were pumped with an ordinary breast pump; only one or two drops of milk could be obtained.

February 8th. Patient returned, reporting that there was a slight oozing from the nipples starting that day; in the interval there had been no sign of any milk.

February 13th. A slight oozing at times from the nipples, no pain, breasts much softer and more flabby. No milk could be expressed manually on this date.

February 18th. The patient brought a small specimen of milk, about 2 c.c. in all. Analysis was deferred, as it was hoped to obtain a larger specimen the next day.

She was again treated with the same x-ray dose. She left the city on this date.

*Milk examination.*—The sample obtained on the 18th. was sour and curdled when examined. Fat was about 4.6 per cent., and total N. 0.6, indicating protein about 3.8 per cent.

The sample obtained on the 19th. transferred as completely as possible to a weighed vessel, weighed exactly one gram. The fat content was 2.2 per cent., protein 0.8. This milk was thinner in appearance, alkaline to litmus, and the microscopic appearance was normal, but with fewer fat globules.

These figures agree much more closely with those of normal human milks.

*Summary.*—A case of galactorrhoea is described, of unknown etiology, the patient being otherwise apparently normal in every respect. No endocrine abnormality could be detected.

The milk was of extremely abnormal composition, with high total solid, fat, and protein, and low lactose content.

X-ray treatment afforded immediate relief of pain, and induced cessation of milk-flow.

It is of course uncertain whether permanent benefit has been obtained,\* but it is obvious that repeated treatment can be carried out safely, and will prevent the milk-flow and consequent discomfort.

We desire to thank Miss J. E. Williamson for her assistance in carrying out the chemical analyses.

\*A report by the patient, written May 14th, states that the left breast was then much smaller than the right, with a much smaller flow of milk and no pain; the condition of the right breast is as before treatment. Evidently further X-ray treatment is indicated.

#### REFERENCES

1 The methods of analysis used are given in Hawk's *Practical Physiological Chemistry*, 7th edition, except that for milk-creatinine: Denis and Minot, *J. Biol. Chem.*, 1919, 87, 323.

The other references quoted are: Berkeley, "Midwifery," 1922, p. 570; DeLee, "Obstetrics," 1915, p. 907; Hinselmann, *Deutsch. med. Wochenschr.*, 1920, 46, 312.

## CONSERVATISM IN THE TREATMENT OF CHRONIC ACCESSORY NASAL SINUS DISEASE WITH A REPORT OF AN ILLUSTRATIVE CASE

FRANK A. MACNEIL, M.D.

*Attending Surgeon, Eye, Ear, Nose and Throat Department, Misericordia Hospital and  
Children's Hospital of Winnipeg*

THE treatment of accessory nasal sinus disease is peculiarly difficult and especially is this true in cases of pan-sinusitis for which previous operations have been attempted.

There are certain general principles formulated which one is bound to observe in all cases, but details that necessarily present themselves in individual cases have to be dealt with differently. The dissimilarity of opinion that has existed on the subject of treatment in the past few years is bound to be confusing—of course such diversity of opinion happily does not exist to such an extent to-day—and yet perhaps with regard to determining whether an operation shall be radical or whether it be conservative, opinions differ too often.

Unfortunately in so many cases the diagnosis is difficult. Although the nasal cavities are comparatively simple in anatomical arrangement, the accessory sinuses which communicate with them are always complicated, and many variations from the normal occur, and these facts must continually be borne in mind when an operation is contemplated.

Referring to the ethmoidal labyrinth, Skillern<sup>1</sup> says, "After persistent treatment by whatever means other than surgical if the suppuration continues, and it becomes apparent that it can only be influenced by surgical intervention, what shall this consist of; to open the lid of the ethmoid by removing the middle turbinate, or to assume the entire labyrinth should be removed and proceed to do this? Obviously the latter is preferable if we are convinced that complete extirpation is indicated, but in some cases we are by no means sure that the infection is not localized to a few cells, where it will be possible to bring about a cure, and at the same time, conserve a large portion of the ethmoidal structures."

The same thing applies in operations on the frontal sinus. If the limits of the disease can be reached by the endo-nasal route, it is no doubt

the procedure to adopt. But it is thought by many that to cure a chronic frontal sinusitis and to avoid its recurrence, it is absolutely necessary to eradicate the cavity. Personally, I have not been able to depend upon x-ray findings in sinus work to determine just how much surgery should be done. Neither do I attribute this to faulty radiography. It seems to me there is a tendency to overestimate its value. For instance, how often is one deceived by x-rays of the antra? Veilings do not necessarily mean suppuration, and again, pus may be present and no shadow be seen in the plate. In this region, and in frontal sinus lesions there is no doubt, however, that the x-ray is of more value than in the ethmoids and sphenoids.

In the case I report here I was able, however, with the aid of x-rays, to determine definitely that the frontal sinus was not wholly involved. The antrum having been already operated upon, I could not gain any information about it, and as to the ethmoids and sphenoids, plates were of no assistance.

A word in conclusion as to how one is to determine when the maxillary antrum is diseased. I wish to repeat that by no means can one depend on x-ray findings. In the last year I saw an antrum opened on positive x-ray findings, and the whole of the mucous lining of the cavity was normal. Another case of my own about six months ago having definite veiling of the left maxillary sinus, when opened up proved to be a very rudimentary sinus—the cavity when located appeared to be only large enough to contain 1 cc. of fluid, but it also appeared to be normal.

As to puncture and irrigation for diagnostic purposes, men of authority and wide experience are at variance. Skillern<sup>2</sup> says, that puncture and irrigation should be tried first, because it frequently happens that severe forms of disease can be cured by this simple procedure alone. I

believe, however, that while this is true, yet in cases where the mucous membrane is diseased and perhaps polypoid, puncture and irrigation are of no value in establishing the diagnosis, because in many cases the washings return clear. Dutrow and Neugebauer<sup>3</sup> advise us to discard this method altogether, for various reasons, the chief being that it is dangerous. According to the literature, since this method has been in practice, fifteen deaths have been reported as directly due to this procedure. Hajek<sup>4</sup> regards the procedure of puncture and irrigation of the maxillary sinus as harmless.

I feel that when all the methods that we know of are applied to determine whether or not disease is present in the antrum and they in turn fail to convince us, that opening of the antrum by the canine route for exploratory purposes is justifiable.

*Case.* Miss D., who consulted me October 14th., 1922, complained of being in general ill health for the past year or more. She suffered with intense headache which was more or less constant, but attacks came on at intervals of a few days which were almost unbearable, accompanied by severe attacks of dizziness. The lips were practically never free from herpes. She herself knew the trouble to be in the nose or left antrum as she told me, and came seeking relief. The left antrum had been operated on about a year previously through the canine route, and was being irrigated almost daily through the canine tooth socket, but in spite of this her condition was getting worse.

*Examination.* The left side of the face was slightly swollen over the antrum and tender to the touch. Tenderness was present over upper and inner angle of the orbit (Ewing's sign). In the nose was seen a large polypoid middle turbinate, the inferior turbinate also was hypertrophic. Muco-purulent secretion was present in abundance in the middle and inferior meatus. The septum had a large spur projecting into the ethmoid region on this side too. On examining the mouth, I could see pus exuding from the tooth socket through which the irrigations were given. A probe passed through the opening readily into the antrum.

I advised operation and two days later, at the Misericordia Hospital, I resected a large polypoid middle turbinate in the manner described by Sluder<sup>5</sup>, and curetted the anterior ethmoidal cells, enlarged the frontal sinus ostium and gently curetted to about the level of the infundibulum.

She left the hospital in two days and the after treatment consisted simply of suction and irrigations on alternate days for the next three weeks. Very little difference could be seen at the end of this time in the amount of pus that was being excreted. I decided, therefore, that something further must be done and on December 16th., 1922, practically a month from the time the first operation was performed, she was readmitted to hospital. After resection of the septum I removed granulations from the anterior ethmoidal region, opened and curetted the posterior ethmoids as well as opened the sphenoidal sinus; I may say that the sphenoidal sinus was very easily opened into, I did not require to use any other instrument than a small curette, and rather think the disease had already broken through the anterior wall. In a few minutes I was able to explore the whole cavity with the same instrument, it being about the size of an ordinary hazel nut. Following this operation practically the same after treatment was instituted, the frontal sinus being irrigated daily with Dakin's solution by means of the Eustachian catheter, and perhaps not using negative pressure as often.

After a month or six weeks, decrease in the amount of discharge became noticeable. I might mention here that the antrum was being irrigated daily also, it was thought that this cavity only acted as a reservoir and therefore was left untouched but for the irrigations. Late in January of 1923, I decided the antrum should be opened, too, and very reluctantly proposed this third operation. With consent, I opened the antrum and was not altogether surprised to find the floor of the cavity quite extensively involved. Granulation and polypoid tissue was removed from around the opening into the canine tooth socket and nasal angle, the remainder of the cavity appeared to be normal and was left untouched. The usual Caldwell-Luc operation was done and the patient sent back to the ward.

Improvement went on from this gradually, and when we discontinued treatment about four months from the time of the original operation in October, 1922, there was practically no discharge from any of the sinuses. The sphenoidal sinus had granulated in and was now about half the original size—this could be seen plainly on anterior rhinoscopy. She is free from symptoms now, almost a year after the final operation and about seven months after treatment was discontinued.

*Conclusions*

1.—It is not always possible to determine just how much one should do in an operative way, when one begins treating cases of this particular kind—in other words, the diagnosis cannot be definitely made at the beginning.

2.—A definite knowledge of the anatomy of the accessory sinuses is essential before surgery of any description is attempted.

3.—Irrigation and puncture are a valuable aid in certain types of maxillary sinus disease only.

4.—Second only to careful operation is persistence and patience required on the part of the surgeon in following up the after treatment.

## REFERENCES

- (1) SKILLERN, ROSS HALL, *Laryngoscope*, November, 1920, vol. xxx, p. 689.
- (2) SKILLERN, ROSS HALL: Cited by W. E. GROVE, *Otology, Rhinology and Laryngology*, December, 1922, vol. xxxi, p. 917.
- (3) DUTROW AND NEUGEBAUER: Cited by W. E. GROVE, *Otology, Rhinology and Laryngology*, December, 1922, vol. xxxi, p. 942.
- (4) HAJEK: Cited by W. E. GROVE, *Otology, Rhinology and Laryngology*, December, 1922, vol. xxxi, p. 917.
- (5) SLUDER, GREENFIELD: *Headaches and Eye Disorders of Nasal Origin*. Chapter I, p. 55.

## FIXED PRINCIPLES IN THE FEEDING OF INFANTS

F. M. FRY, M.D.

*Assistant Physician in Charge of Paediatrics, Royal Victoria Hospital, and Senior Lecturer  
in Paediatrics, McGill University, Montreal*

SO marked and so frequent are the changes in the methods of paediatricians in artificial feeding of children, that it seems opportune to ask whether there are no general principles on which all can agree in theory, in daily practice, and in medical teaching.

The following suggestions are made not in any spirit of carping criticism of one's *confrères*, but as an attempt to find some broad principles accepted by all of us as important and practical enough to guide us in prescribing a food, and in giving to medical students a reasonable amount of uniform consistent teaching based on research confirmed by ample clinical trial. Such more or less fixed principles and truths need not check free speculation, experiment, or change in one's methods, provided there is sufficient ground for adopting better measures.

Before making suggestions let us consider some of the conflicting methods and the rapid changes in our views. Modern paediatrics was born when Paris University appointed the first Professor of Children's Diseases about forty years ago. Germany and Austria followed shortly afterwards and American universities still later founded chairs in this subject.

A broader spirit of culture, perhaps, was brought to bear upon infant's problems then than now, and the difficulties in modifying cow's milk to replace human milk were attacked from many more points of view than at present. Thus,

fats, sugars, proteids and salts were all kept in mind and studied together as would seem necessary when all were being given together. All efforts were concentrated on making a food as close as possible to human milk. From a decade or two of clinical experience, combined with increasing laboratory research, it came to be taught that as the chief differences between cow's and human milk are in proteids and sugars, study should be particularly directed to these two. Now, sugar being deficient one had only to add it to a mixture to rectify this, and it was taught that when one keeps the sugar in about the same quantity as in human milk the infant has little or no disturbance from it. The results of too low or too high fat were duly observed. Salts were not disregarded but gave, it was believed, little trouble. As proteids were in excess they received most attention for many years and almost all agreed that the "tough casein curd" of cow's milk being five times more abundant than that in human milk, gave great difficulty to a feeble infant. It was while proteids were being studied that German analyses were applied, chiefly in Boston, to the problem, and it was found, in 1901, that by considering the component proteids one could imitate human milk more closely than ever before if he used whey cream and sugar. This was extensively tried and most, if not all, who gave it pronounced it a very distinct advance. In Montreal, such mixtures re-

duced the mortality in a baby hospital in one year quite ten per cent. In 1902, Rotch, and his assistants, presented the method to the British Medical Association, in England, as the latest feature in the American percentage system.

Such was roughly the position when, in 1905, our German *confrères* told their post-graduate visitors that German research had shown that the fats gave the chief trouble. At once in every large clinic for children in Austria and Germany, butter milk was to the exclusion of all other foods, held up as the one and only correct food.

Here, it seems, began the chief fallacies, (1) of teaching that any one food can be the only successful one for all infants, (2) of exalting utterly out of its true perspective one ingredient of milk, almost completely disregarding all others, and (3) adopting one dogma, only to discard it in a few months. For, in 1906, it was discovered in Berlin that the sugar was the chief if not the only cause of difficulty; all previous beliefs were thrown aside, though a winter's study of this teacher's writings, and in his wards, laboratory, and diet kitchen, failed to reveal to an Anglo-Saxon mind the grounds for such opinions. The catch phrase, "cell-harm" was given to a mysterious nebulous condition never shown by the microscope, and even the word "poison" was used in describing sugar.

One might remark in passing, that this "poisonous" sugar has always been in human milk to the amount of seven per cent. "Proteid" milk was evolved in order to eliminate as much as possible of the sugar, and to a less extent the fats. This gave, in some cases, almost wonderfully good results for a limited time, followed in many by sudden disaster. It was tried fairly widely in North America and was soon discredited in Germany, chiefly because in Germany it was sterilized and gave the well known results of a devitalized food.

Before one could well digest these opinions the only blameless ingredient left in the milk was suddenly held up as the great cause of trouble, namely, the salts. High salt content, as in whey, was now the chief topic.

Surely one is on safe ground in protesting against such rapid change of views. Truth does not change and what was true in 1905 was equally true in 1906 and 1922. One would not dwell on these rapid changes were it not true that they have led North American opinion hither and thither with almost equal rapidity.

For a few years we have followed the German

from proteids to fats, suddenly dropped fats and blamed sugar for almost all our difficulty, and finally exalted the salts, *i.e.*, we have completed the whole circle of all the ingredients of milk.

Friends of ours have recently found that whey and cream mixtures come close to human milk and they have used them again, thus reaching exactly the point where Rotch left us just twenty years ago.

For several years high proteids have been receiving extra attention, and more recently fats. Butter soup is much in evidence, though only about ten per cent of the fats is fatty acid which is altered by the treatment. A very recent pronouncement states that, "practical experience has shown that the addition of fat in the form of cream or top milk is a somewhat *dangerous* procedure" and equal parts of milk and water with cane sugar suffice. This last mixture has been used by out-door hospital patients in our own experience for thirty years, and a critic recently pointed out that Dewees recommended exactly this mixture eighty years ago. Have we learned nothing of permanent value in several decades? Are we now off on the second lap of the same circle and in the same order? Do sugars and salts come next?

As the claims for proteid milk did not seem justified, and yet some cases did extremely well on it, it seemed wise to enquire whether the lactic acid in the buttermilk were not the chief virtue in the food. Hence, in 1907, at our request, Dr. Bruère of the Royal Victoria Hospital, Montreal, isolated from cow's milk a powerful producer of lactic acid, namely, *bacillus lactic aerogenes*, grew it on agar, and gave it to us as a stock culture. From this, beef-broth was daily inoculated and incubated for twenty-four hours, when various doses were placed in milk mixtures. The striking control of the fermentation in the stools, with general improvement, was very similar to that seen with proteid milk and it seemed possible that the chief value in proteid milk lay in its lactic acid content, which inhibits all other bacterial action (fermentation) and renders proteids (casein lactate) more digestible. It is true that proteid milk has in the last few years had a striking resurrection in North America, but it is now no longer proteid milk but is generally concentrated by more buttermilk or modified by the restoration of a large amount of sugar.

Are the problems being studied on their own merits or must we have change and some sensational new fashion or fad? Could we not agree

on some such general principles as the following?:

1.—There is no one artificial food suitable to all infants (or all adults).

2.—Infants vary greatly in their idiosyncrasies, their toleration and digestion of food and even in their requirements.

3.—Patients, therefore, need to be studied and tested just as much as foods have been in the past, and a few days are well spent in testing a child's toleration, *i.e.*

4.—The food should be suited to the patient, not the patients to the food.

5.—Feeding must be, partly at least, empirical, for

6.—Foods must be digestible and otherwise acceptable to each patient.

7.—Infants have a reserve, often, of digestion, which we cannot measure, and there may be several different but equally successful foods for a given case.

8.—Human milk is still the best food for the human offspring, and therefore

9.—That artificial food, at least in normal cases, should be preferred which most resembles human milk.

10.—"Caloric feeding", if rigidly followed is often a farce, for a calorically correct food is by some infants refused, or vomited or discarded by

the bowel, and children vary in their caloric requirements. The most accurate means of measuring quantities is by calories.

11.—Qualitative feeding (percentage feeding) alone is equally fallacious—both the qualitative balance and the caloric value should be considered.

12.—It is wise to distinguish between feeding in the normal and feeding in the abnormal. In the former our rules will apply; in the latter our rules may fail us and empiricism must prevail.

13.—Proteid milk is a temporary therapeutic agent with a definite narrow indication.

14.—The chief value in proteid milk, in concentrated or in modified proteid milk, and in lactic acid milk, is in the lactic acid which inhibits all other bacterial activity (*e.g.* fermentation) and makes casein more digestible.

15.—It is not important (in most cases) to give any one sugar exclusively. Maltose is absorbed in larger proportion than other sugars, breaks up into two molecules of dextrose, and often quickly gives a striking gain in weight. It aggravates some cases of vomiting by being partly split up in the stomach, and is less laxative than other sugars, because it is absorbed higher up in the alimentary canal.

---

**A Martyr to Roentgen Rays.**—At the quarterly court of the London Hospital, the president, Lord Knutsford, made a presentation to Mr. Reginald Blackall, one of the pioneer roentgen-ray workers in this country, who had joined the staff twenty-two years ago. At that time the dangers of exposure to the roentgen rays were not known. But later when they were known and one of his fellow workers lost both arms and another his life, he still stuck to his work. The result was that he lost both hands. The Carnegie Trust had placed his name on the roll of honour of the "Hero's Fund" and granted him \$375 a year. The London Hospital is now granting him a pension of \$1,425 and insuring his life for a substantial sum on behalf of his wife and family.

---

**A Scarlet Fever Antitoxin.**—George F. Dick and Gladys Henry Dick, Chicago, have shown

that the streptococci which cause scarlet fever produce a toxin, and that this toxin, when injected into susceptible human beings, produces nausea, vomiting, general malaise, fever and a scarlatinal rash. Used in high dilutions, the toxin gives a skin test for susceptibility to scarlet fever. In more concentrated solutions, it can be used in preventive immunization. The blood serum of persons immunized with the toxin and of patients convalescent from scarlet fever contains an antitoxin that neutralizes the toxin. This has been determined by means of the skin test. A scarlet fever antitoxin has been obtained by immunizing a horse with scarlet fever toxin. This antitoxin may be concentrated by the methods employed for concentrating other antitoxic serums. The therapeutic value of the antitoxin can be determined only when the results of its use in a large series of carefully controlled cases are available.—*Jour. Am. Med. Assoc.*, Apr. 9, 1924.

## COMMUNITY PSYCHOSIS\*

H. O. McDIARMID, M.D.

*Brandon, Man.*

I SHOULD apologize for using a scientific title for a paper which is not much more than a narrative relating events which are of some interest to the medical profession. These happenings are recorded so that those of you who have not lived in a community where the mental balance of many of its residents became upset simultaneously may have some idea of the possible extent of this mental vertigo and be able to formulate a line of action for yourselves in case you meet with a situation similar to which we found ourselves in Brandon.

All through past history there have been the stories of noted magicians who have professed to work miracles and through their power of communication with their particular deity, claimed to have control of the elements and to be able to protect their people from famine and pestilence, and to cure those who were stricken with diseases supposed to be due to mysterious manifestations of the wrath of an angry god.

In aboriginal America and even to this day, the Red Man's "Medicine-Man" beats his tom-tom, dances about the fire, and utters incantations to which the on-lookers listen with the profoundest awe and with the simple belief that prayers will be answered. These pseudo-medicine men in all ages were not slow to observe that these occasions presented an excellent opportunity for personal gain to be made from their unsuspecting believers, and made no effort to discourage the paying of tribute or the offering of gifts.

Suggestion, hypnotism, and mesmerism were probably as well known two thousand years ago as to-day, possibly under other names, but the knowledge of their possible value in disease has become general only as better methods of diagnosis were used to differentiate between physical and functional sickness.

The *raison d'être* of this paper is to relate the influence exerted by a man who claimed to be a reverend doctor and who invaded our peaceful community during the past summer, compara-

tively unknown, although not exactly unheralded, yet in the space of two weeks he had thousands of people in this city and in the district for many miles around off their mental balance.

Who this reverend doctor was or where he came from is hard to say. He said he was an Englishman, although I believe he claimed Scotland as his home when speaking to Presbyterians. He apparently was fairly well educated, had travelled a Chataqua circuit for a time, and had been a vaudeville actor. I believe that he was converted to his present calling in California, where the originator of any new cult has a very fertile field. Judging from rumour as to the amount collected at his meetings he found his calling very lucrative.

He was a small man, thin, and well dressed in the latest style with his coat drawn in at the waist by a neat belt. He had a rather Eastern physiognomy and used his hands almost incessantly both while speaking and healing.

His *modus operandi* was much the same as that of the old style evangelist. He was a poor singer, had a ready wit, offered a very fervent prayer, preached with considerable eloquence, and exhibited an extensive knowledge of Holy Writ.

He rented the largest building in the city, filling all the available space with seats and spoke each night to from five to seven thousand people. You will agree with me that he must have had great persuasive power, much more than the reverend gentlemen who simply exhort people in the good old-fashioned way.

This persuasive power was largely his extraordinary claim to heal all manner of diseases in those who would only believe; the halt, the maimed, would be made to walk; the blind would be made to see, the deaf to hear; crutches would be thrown away with shouts of joy, cataracts would melt and run down the cheeks like tears, goitres would vanish under your very eyes, and that plague of the white race—cancer—would be cured for ever. The cured it was stated would be exhibited at subsequent meetings on the platform where, by the way, the cure would be performed, and would give their testimony as to the

\*Read at a meeting of the Manitoba Medical Association, Brandon, 10th. October, 1923.

wonderful change in their physical condition after the laying on of hands and anointing with oil. To say that his advertising was successful is stating the facts mildly. For two weeks our city was like a fair; people came on trains every day, and the roads were crowded with automobiles making their pilgrimage to the shrine. The streets about the arena were almost impassable for the cars parked for many blocks around.

The healing, of course, was the last part of the programme. Each time, and with a large stage all set, the afflicted walked or were assisted to the platform, where they were received by a young lady assistant and one of the city ministers. Supported by each arm they approached the reverend doctor. Dipping his fingers in a bowl of oil he would lay his hands on the patient's forehead while offering a short prayer and at the same time would push the head back. The attendants would gently lay the victim on the floor, put a cushion under the head, and bring up the next one. This performance would go on, at length, taking about a minute each until all those who had white cards had been disposed of.

Some lay perfectly still for a time and then got up if they could. Those that could not, remained there till the meeting closed and the lights turned off. A few were either hysterical or feigned it, for when they became too noisy the doctor whispered a word or two to them and they were quiet. Some would not fall over and were led to a chair. One stout woman waited a few minutes and not feeling the spell coming on rested her head on the preacher and no doubt thinking she should do something simply wilted and the attendants having released their hold allowed her to fall to the floor with a resounding thud.

The white cards presented at the altar by those wishing to be cured apparently were given them at smaller meetings held during the day, at which presumably they were given instructions, for it was striking to watch the almost similar actions of most of those who were treated.

As evidence of this man's credibility I will relate an incident. He asked, I understand, to speak to one of the service clubs in this city and was accorded the privilege, and was introduced as a member of the same club somewhere in California. After luncheon he was asked if he would have his attendance recorded with the name of his home club to which he agreed. The secretary here sent the record to the club in which he claimed membership, and received a reply denying any such affiliation.

There are connected with this story many interesting points for consideration:

- 1.—The man's power of collecting such enormous crowds.
- 2.—The combining of a faith in God and religious belief with the healing of physical ailments.
- 3.—The physical results.
- 4.—Psychological effects on the sane believer.
- 5.—The attitude which we as a profession should take.

These I do not propose to discuss except to say that he was brought here through the influence of the ministerial association, although be it said that a few refused absolutely to have anything to do with him. Others let it be known that they were not enthusiastic, while others acclaimed him as one of the seven wonders, if not the incarnation of Christ himself.

As to results—that is the physical results—there is little to say. To such a body as this it would be monotonous to relate all the tales heard about his successes and failures—mostly the latter. You are conversant with the class of case in which seemingly beneficial results might be obtained, but I do not think that he anointed one true case of hysteria in all his ministrations in Brandon.

The particular point I wish you to consider is: What attitude should we take toward all such fakirs? Should we show public hostility thus giving them considerable notoriety or should we assume an attitude of indifference and inform the public as quietly as possible as to the exact nature of their claims. This latter position we have taken before and many of the irregulars are flourishing under it.

We have many cults to-day invading our precincts, and I suppose we always shall have, but these we can condemn as without any scientific basis; but it is another thing to convince people who with their abiding faith in the Scriptures are willing to believe almost anything that falls from the lips of any renegade simply because he wears the cloth and clinches his arguments with quotations from the prophets.

We have now examples of both lines of action but as to the future results no one can say. In cities he visited previous to coming to Brandon this man received much prominence through accounts of his meetings reported in the papers. In some cities, I believe, not much adverse criticism was offered although in one city he was certainly not loudly acclaimed. In Brandon the press hardly even mentioned that he was in town.

About the end of his ministrations committees were formed to report results. One composed of representatives of the local ministerial association and medical association were to get the white cards signed by the applicants and follow up the cases. I understand, however, that the cards disappeared with the gentleman's exit so the only cases that will be investigated will be those that offer themselves voluntarily. Another committee of his followers has also been formed to offset any derogatory findings that might become known.

In Brandon many of the doctors were asked why we did not do something. Why not denounce him from the hill-tops? Why not examine the cases and publish the findings? for by our silence we were admitting that he possessed some mysterious power that we did not. What was the use when he always could reply that any failure to make a perfect cure rested with the

afflicted themselves. They simply did not have enough of that deep and abiding faith. I did proceed to enlighten some women in my office one day and tell them what I thought of such an impostor. I might say that I did it only once. The amount of resentment shown by one of them convinced me that many people have all the education they can absorb and it is a mistake to try to pour new wine into an old crock. The reverend doctor has left our midst. His memory is gone also. His name is mentioned only as a synonym for gullibility. His cures are still here the same as before unless their perturbed mentality has not resumed its usual poise.

I think we adopted a sane course in pursuing a policy of watchful waiting. We did not—as a body at least—make enemies of those who were his faithful followers. We are still here carrying on as before.

---

## CHILD GUIDANCE CLINICS

G. S. MUNDIE, B.A., M.D.

*Lecturer in Psychiatry, McGill University; Assistant Physician, Royal Victoria Hospital*

**W**ITHIN the last few years—particularly since the war—psychiatry has assumed an important position in the field of preventive medicine. The old idea of psychiatry dealing only with insane persons has disappeared. Today psychiatry is concerned with the behaviour of persons in relation to their environment and inherited tendencies.

The solution of the problems of such diseases as dementia praecox, manic-depressive psychosis, general paresis, etc., is being constantly sought for by psychiatrists and their co-workers. A large field, and one which should have a distinct bearing on the development of these diseases, has been the study of children who show tendencies of mal-adjustment. It has long been felt that the success of stopping the increasing number of patients committed to our mental hospitals lies in the study of the mental life of children. "The adult is what the child was; whoever can control the mental, physical and moral life of the child, thereby can direct the child's future actions as an adult." Psychiatry has entered the fields of

education, industry and criminology, and has already given valuable assistance to them all. In education, the importance of discovering the number of mentally deficient children in each school and of training them according to their capabilities has been clearly demonstrated. The danger of attempting to educate normal children associated with feeble-minded children has been pointed out.

In industry, quantity and quality of production has been increased by the psychiatrist studying the mental side of employees and placing them in positions for which they were best suited.

In criminology the studies of Glueck, Healy, Anderson and others have clearly shown the relationship between mental defect and mental disease to all types of crime. At first, statistics showing the relationship between mental defect and juvenile delinquency were somewhat radical, but they did serve a useful purpose in drawing attention to the importance of studying a child's mental life in relation to his social life. Whereas at first as high as fifty per cent. of juvenile delin-

quents were considered feeble-minded, later studies show that only about ten per cent. can be classified as such. The majority of these children belong to the dull normal or retarded intelligence group; they also often reveal personality conflicts.

In March, 1923, the Mental Hygiene Committee of Montreal organized what was first called a Habit Clinic for Children, but was later renamed a Child Guidance Clinic. The need of such a clinic had been shown by the number of children referred to the Psychiatric Clinic, Royal Victoria Hospital; these children were troublesome in school, were backward in their studies, were beginning to show delinquent traits, etc.

This clinic was not started at the Royal Victoria Hospital because it was felt that children would come more readily to a clinic in an office building in the centre of the city in view of the fact that they did not consider themselves sick in the ordinary sense of the word. Also the clinic, which is held in the Blumenthal Building, 207 St. Catherine St. West, is at an important transfer corner and more accessible for the parents of the children.

One year's operation of this clinic has clearly shown its definite usefulness in the community. Not only has the attendance increased to such an extent that the present staff is inadequate, but besides the children sent by schools, probation officers and social agencies, parents themselves are bringing their children for advice. The clinic is held two mornings a week and the staff consists of two psychiatrists, a psychiatric social worker and an office secretary. The average attendance is from fifteen to twenty-five at each clinic.

The clinic is not limited to particular types of children. It is not a clinic for feeble-minded or psychopathic children. It is also not a clinic for simply diagnosing conditions; it is essentially a treatment clinic. The purpose of the clinic is to study, help and advise in the case of any problem child referred to it, whatever the problem may be. It offers its services whether the case be that of a child with superior abilities, whose parents wish guidance in maintaining his mental health and mapping out a programme for his best development; or a pre-school child who has begun to develop habits that later may become injurious to his mental health; or a school child who manifests definite conduct disorders or educational maladjustment; or a child who has developed a mental conflict that later on may result in a mental breakdown; or a child whose personality make-

up is such as to bring about difficulties later in life; or a ward of a child-placing agency who is to be placed in a foster home; or a child whose delinquency has brought him to the Juvenile Court.

Whatever the problem may be, the Child Guidance Clinic endeavours to be of service to the child and to those responsible for his welfare. The problems may be truancy, stealing, lying, bad sex habits, incorrigibility, sleep disorders or conduct disorders.

The clinic renders its greatest service to those children who have normal intelligence, but who show something wrong in their interests, or attitude, or behaviour, or personality, or who are being constantly subjected to environmental influences that prevent the wholesome and healthy development of character and personality.

*Methods.*—The examination of each child consists of four parts: (a) social, (b) physical, (c) psychological and educational and (d) psychiatric. After all the needed information has been obtained along these four lines and a thorough analysis made of them, a careful diagnosis of the entire situation is made and recommendations for treatment are decided upon. Recommendations for treatment are made along four lines: (a) medical, (b) psychological and psychiatric, (c) educational and (d) social.

*Social Examination.*—The social investigation is a record as complete as can be obtained of the child's environment, the stock from which he springs, and the child's own developmental career. It describes not only the physical make-up of the home, but what is more important, its atmosphere—intellectual, moral, religious and social. It is intended to show the influences hereditary, environmental, hygienic, educational, etc., that have operated to make the individual child what he is. The social investigation made by the psychiatric social worker differs from that usually made by other social workers, in the special emphasis it lays upon facts related to the mental and physical development of the child himself; of his family, of his immediate ancestry and of the personality and mental attitude of the individuals who make up the world that surrounds the child. It seeks to record the inter-play of these personalities and to find there, as well as in the concrete evidences of care or neglect that the home affords, the cause of unhappiness and maladjustment.

*Physical Examination.*—It is well known that most problem children present mild or serious

physical defects calling for remedial effort. The relationship between physical health and a person's ability to adjust his life and behaviour has long been recognized. Physical examination of each child includes the heart, lungs, abdomen, nervous system, nose, throat, ears and teeth, as well as the ductless glands.

*Psychological Examination.*—This examination is given in order to determine the mental development of a child as compared with other children of the same age, to measure his educational progress and to discover special abilities and disabilities. It is done by applying standardized mental tests which are based upon results obtained by psychologists in the examination of large numbers of children of various ages, races and nationalities. Thus it is possible to secure essential information concerning the mental endowments, the educational progress, and the abilities, as well as the special disabilities, of an individual child.

*Psychiatric Examination.*—The psychiatrist makes a study of the way in which the mind of the child works. He seeks to get a picture of the child as a living and adjusting personality, of the child as a whole, and not any special phase of his mentality. He analyzes the entire case record, putting together all the facts of the case in their bearing upon the personality make-up of the child and the forces from within that have seemed to make him behave as he does. In addition to what the psychiatrist gets from analyzing the social investigation, the physical, psychological and educational examinations, he adds that most valuable contribution obtained from the child himself—an account of his inner mental life, his own view of his personal experiences, his own attitude towards himself, his associates, his parents, brothers and sisters, other relatives, teachers, his own account of his behaviour and motives for such. The psychiatrist seeks to get a free, full and frank account of the child's inner thoughts and his own personal way of dealing with his instinctive life. In making such a study, the psychiatrist discovers unhealthy attitudes, morbid trends, mental conflicts, pathological personalities, and even serious nervous and mental disorders and defects. The principal work of the psychiatrist, to sum up, is to understand how the child's brain works and to comprehend the processes and mechanisms that the child uses in adjusting himself to life situations. In order to do this he must avail himself of every aspect of the social investigation,

psychological and educational studies, physical and psychiatric examinations.

*The Real Value of the Clinic.*—The success of the clinic depends not on the social investigation, psychological and educational studies, and physical and psychiatric examinations—the results of which could easily be simply card indexed—but on the evaluation of all these five divisions and on the recommendations for the treatment of the child as a result of this evaluation. The recommendations for the treatment should be given under four headings—medical, psychiatric and psychological, educational and social. These recommendations must be made as definite, concise and practical as possible. In most cases it is wise to give an ideal solution as well as a recommendation which will be most practical in the particular case.

*Results.*—Such is the machinery necessary, the aims and objects striven for, in a Child Guidance Clinic. What are the results from such a clinic and has it a definite value not only from a community viewpoint but from a scientific medical point of view? The Child Guidance Clinic, conducted by The Mental Hygiene Committee of Montreal, has been in operation since March, 1923—thirteen months—and in that time has had over 375 children referred to it. In order to understand the difficulties of such a clinic in Montreal it must be remembered that in this city there is no compulsory education; the school boards are legally only compelled to educate children of "sound mind"; there are no special classes in the schools for mentally deficient, neurotic, or mal-nourished children; there are no visiting teachers or attendance officers attached to the schools; there are no institutions for the feeble-minded in the Province of Quebec; and, neither the city or province appreciate the value of a well conducted juvenile court.

With all these disadvantages and also the disadvantage of having an inadequate staff, the clinic has been of distinct value to the community. This has been shown by the fact that the number of children referred by teachers and principals of the schools, by social agencies, the Juvenile Court, and parents has been steadily increasing. Unless the clinic was getting good results these agencies would not continue to refer children.

The principals of the schools have been enthusiastic over the results obtained by the clinic. Boys and girls who had been exceedingly troublesome or backward in school and were on the

verge of being expelled, have responded to the methods of treatment used at the clinic. In Montreal, if a boy proves too troublesome in school, he is expelled without any serious attempt being made to adjust the school and the environment of the home with the boy's personality. The expulsion is often the first step towards first a delinquent and then a criminal career. The clinic has had several letters of appreciation from principals of schools. Several boys and girls, who would formerly have been sent to industrial schools, have been adjusted to their environment, or, where necessary, the environment was changed, with the result that they showed no further signs of delinquency. From the scientific medical point of view, the clinic has been able to prove that many cases of conduct, disorder or delinquency have been the result of maladjustment of a child to his environment and inherited tendencies; or the result of mental conflicts,

often along sex lines; or of personality conflicts, as timidity, seclusiveness, morbidity, etc.

*Conclusions.*—Child Guidance Clinics have demonstrated that they have a distinct place in the field of preventive medicine. This continual success will depend on the personnel of each clinic. Every psychiatrist who has had a training in a mental hospital is not suited for this type of work. He must himself have that personality and mental make-up which will enable him to understand the workings of a child's mind. The social workers and psychologist must also have special attributes for this kind of work. There must be the fullest co-operation between the different social agencies, schools, courts, hospitals and parents, to ensure the best results. The recommendations made by the clinic for each child must embrace each phase of his life—medical, psychiatric and psychological, educational and social; and they must be practical.

---

## THE USE OF PHENOLTETRACHLORPHTHALEIN AS A TEST OF LIVER FUNCTION

BY O. C. TRAINOR, M.D., C.M.

*Pathologist to the Misericordia Hospital, Winnipeg*

MUCH interest has of late attended the employment of phenoltetrachlorphthalein as a test of the functional capacity of the liver. The various investigations have all arisen in the wake of the publication by Rosenthal of a new and relatively simple method of estimating the degree of dye retention in the blood plasma after its intravenous injection.

A review of previous attempts to devise a reliable test of liver function shows them to have followed closely the known physiological functions of the liver; and, inasmuch as the word "finis" has not as yet been appended to the subject of liver physiology, we may expect the introduction of new methods of testing the functional capacity of the liver in direct ratio to new discoveries in the physiology of the organ.

The known physiological functions of the liver fall under three main headings:

(1) The glycogenic function: *i.e.* the conversion of monosaccharides—dextrose, laevulose, galactose, into glycogen, a polysaccharide analogous

to starch; and the storing of glycogen pending a future reconversion to dextrose.

(2) The formation of urea in relation to nitrogen metabolism, by the synthetic combination of the various protein end products—amino-acids, ammonia, etc., a combination brought about in an undetermined manner through the activity of the liver cells.

(3) The formation of bile, which is in part excretory, being a channel for the elimination of waste products, and in part secretory playing a part in the digestion and absorption of fats.

Inasmuch as no anatomical or functional differences can be demonstrated between liver cells, it is, perhaps, justifiable to assume that each individual cell possesses in part this three-fold function. If this be true it follows that should the cell be damaged or destroyed, each function would show a proportionate impairment; and conversely, a decrease in any one of these functions would indicate cell damage. To follow this reasoning to a conclusion, it is obvious that

any test which indicates accurately an impairment in any one function, may be considered as a reliable index of the total functional capacity of the organ, provided, of course, that the test be quantitative in character. Efforts in the past, as now, have been directed towards finding a test which would indicate impairment in one of these physiological functions.

*The Carbohydrate Tests.*—Subsequent to the discovery of the glycogenic function of the liver by Claude Bernard, the idea of using carbohydrate tolerance as a test of liver function occurred to many investigators of the French and German schools. Published results show a discrepancy which almost completely invalidates them. Strauss in reviewing the work done suggested that the discrepancy in results might be attributed to the particular carbohydrate used. He demonstrated that 100 gms. of dextrose in 500cc. of water given on an empty stomach caused glycosuria in only two out of thirty-eight cases of liver disease, whereas a considerable proportion of all pathological liver conditions showed the presence of sugar in the urine following the administration of the same amount of cane sugar. He attributed this result to the presence of laevulose in cane sugar and devised a test using pure laevulose. One hundred grammes of laevulose are administered on an empty stomach and the urine voided during the following four hours is tested for the presence of this sugar. The normal individual should tolerate this amount of sugar without glycosuria. This test received a wide application and a wide diversity of opinion was expressed as to its value. Owing to the fact that little uniformity was manifested in the results obtained, it has not stood the test of time.

Bauer in 1906 proposed the use of galactose and concluded that it was of value in the diagnosis of catarrhal jaundice. Apart from the practical difficulties of administering such large amounts of sugar, the weakness of these carbohydrate tests is that, primarily they fail to take into account the fact that various organs other than the liver are concerned in carbohydrate metabolism; and secondly, to be of any value, they require a careful investigation of the normal sugar threshold in each individual.

*Urea Function.*—Various attempts to utilize the rôle played by the liver in nitrogen metabolism as a basis for estimating functional changes in the organ, are recorded in the literature; the idea being that in diseased conditions one would expect to find an increased excretion of the un-

synthetized end products of protein digestion—amino-acid, ammonia nitrogen, etc.,—and a corresponding decrease in the excretion of their synthetic end product, urea. While it is true that this does occur in cases of severe liver disease, the results are not parallel where the liver is less seriously involved; and moreover, the amount of chemical training requisite for an investigation of nitrogen metabolism precludes the possibility of such tests having a very wide clinical application.

*Fibrinogen.*—There is an abundance of experimental evidence to show that in severe liver injuries there is a definite lowering of the fibrinogen content of the blood, which would appear to indicate that the liver is concerned in the production of this substance. There is, however, no definite proof, as yet, that the liver exercises any monopoly in the manufacture of fibrinogen. It is evident that until such proof is forthcoming a functional test based on the quantitative determination of this substance in the blood plasma, is, theoretically at least, open to very grave objections.

*Urobilinogen.*—The presence of urobilinogen in the urine is indicative of liver disease. Normally the bile pigments are converted in the intestine into urobilinogen which is absorbed and carried to the liver where it is reconverted into ordinary bile pigments. In disease this function of the liver cells is impaired, and the reconversion being impeded, some of the urobilinogen is excreted unchanged in the urine. Demonstration of the substance is a very simple procedure. A few crystals of p. dimethyl-amino-benzaldehyd are added to a few c.c. of urine, the mixture is shaken and made acid with a few drops of hydrochloric acid. The development of an intense red color constitutes a positive reaction. This test is positive in practically all cases of liver disease, and is probably specific, as no other organ has been credited with the power of converting urobilinogen into ordinary bile pigments. The only objection, and it is one of some moment, which can be levelled at the test, is that it is purely qualitative in character, lacking the quantitative feature which should be considered as one of the essentials of an ideal functional liver test.

*Phenol-tetrachlorphthalein.*—This compound was first prepared by Orndoff and Black, of Cornell, in 1908. Chemically it is closely allied to phenolphthalein having very similar properties. It is an odorless, tasteless, crystalline compound,

insoluble in water, and forming deeply colored hydrolyzable salts with alkalis. Its pharmacological properties were studied by Abel and Rountree in 1909. They state that "the compound itself is non-irritant locally, but that solutions of its alkali salts administered subcutaneously, act as decided irritants." They further state "that it has a very low toxicity; that it exercises no hemolytic influence; that it does not affect the coagulability of the blood; that it has no bactericidal or antiseptic properties; and, finally, that it escapes from the body only in the bile."

The behaviour of the phthaleins in the choice of a channel of excretion is a curious phenomenon. Phenolphthalein is excreted in both urine and bile, phenolsulphonphthalein only in the urine, while phenoltetrachlorphthalein escapes in the bile alone.

The specificity displayed by the liver in the excretion of this dye suggested to Rountree the possibility of using it as a test of liver function in a way analogous to that in which he utilized phenolsulphonphthalein as a test of kidney function, *i.e.* a dye which is excreted solely by one organ and which by the demonstration of a diminished excretion would indicate a diseased condition of that organ. He administered the drug intravenously in the form of the di-sodium salt and determined quantitatively the amount excreted in the faeces, using a colorimetric method in which a known quantity of the dye, dissolved in distilled water, is used as a standard, and compared directly with a solution of the faeces in a colorimeter. Sodium hydrate is added to each solution to bring out a maximum intensity of color. Rountree applied the method clinically to a large series of patients suffering from various types of liver disease, and also to animals with experimental liver lesions. He found that the test yielded informative results in many cases where liver disease was known to exist and that the information obtained was quantitative in character. Although the test represented a distinct advance over anything proposed previously it has several very serious disadvantages, all of which were fully recognized by Rountree himself. To begin with the test is cumbersome and requires a considerable period of time for its completion. The problem of collecting the total faeces over a period of forty-eight hours, as well as being a tedious procedure, admits of inaccuracy. Even with the best technique and a maxi-

mum of co-operation on the part of the patient, some of the material may be lost, with consequent invalidation of the results. The quality of the color obtained may show an admixture of yellowish or brownish-red tones due to the presence of bile pigments. These color impurities are very difficult to get rid of and make an accurate colorimetric comparison very difficult. Finally, the test is inaccurate where obstruction to the biliary passages exists, as obviously this interferes with the excretion of the dye to an extent which is out of proportion to any coexisting disease of the liver.

In 1922, Rosenthal, of Baltimore, devised a method of using phenoltetrachlorphthalein as a test of liver function, based on the ability of the liver to remove the dye from the blood. In this method the amount of dye retention in the blood is estimated instead of the amount of dye excretion in the faeces as in the method of Rountree.

Rosenthal has studied the method experimentally and states "that after intravenous injection of a given dose per body weight, the dye normally leaves the plasma very rapidly and with remarkable uniformity. Striking degrees of retention of the dye in the blood were found to exist where liver damage was produced experimentally by chloroform and phosphorus poisoning. When the dye was injected during the stage of jaundice and toxæmia large amounts remained in the blood over prolonged periods; after convalescence was established, curves of disappearance approaching normal were obtained. In the early jaundice due to mechanical obstruction, before there had resulted any extensive damage to liver cells, it was shown experimentally that the dye could be removed from the blood stream in practically normal time, except that a trace remains in the plasma for twenty-four hours or longer."

The principle of the method as published by Rosenthal, is as follows: Five milligrams of phenoltetrachlorphthalein per kilogram of body weight is injected intravenously. With this dosage elimination occurs very rapidly. In normal individuals from two to six per cent. is present at the end of fifteen minutes and practically complete disappearance takes place at the end of forty to sixty minutes. In cases of liver disease the dye may persist in the plasma in high percentages for many hours.

After the calculated dose is injected a specimen of blood is obtained from a vein in the opposite

arm at the end of fifteen minutes and again at the end of one hour. The blood is allowed to clot and the plasma separated by centrifuging. Should the amount of retention at one hour warrant it, subsequent specimens may be collected to determine the time of eventual disappearance. These later determinations, while of value from the point of view of prognosis, are not essential to the test from a diagnostic standpoint, as a very good idea of the liver function may be gained by observation of the amount of retention at the end of one hour.

The amount of dye present in the plasma is estimated by direct color comparison with a series of standards prepared by the appropriate dilution of an arbitrary standard containing ten milligrams of the dye to one hundred cubic centimeters of distilled water; this amount representing one hundred per cent., as it is the approximate concentration that would be reached in the plasma if all the dye were retained. A series of six dilutions are prepared from this solution in such a manner as to give a series of standards ranging from 25% to 3% in concentration of dye. The specimens of plasma are matched directly, in a good light, with these standards, 5% NaOH being added to bring out the maximum color. This test, in the hands of Rosenthal, has proven itself a very sensitive indicator of any pathological change in the liver.

With a view of determining the field of usefulness of the test, as well as of satisfying myself regarding the convenience of its application clinically, I have employed it in a small series of cases. The results are presented in a graphic form on the accompanying chart.

Three of the cases are normal individuals in whom no disease of the liver could be suspected; the remainder all being patients with clinical evidence of liver involvement. In two of them the clinical diagnosis was confirmed at autopsy.

While the series is perhaps too small to admit of formulating very dogmatic conclusions, nevertheless, the results are illuminating and present striking evidence of the value of the test from the point of view of clinical diagnosis.

*Cases 1, 2 and 3.*—Normal pregnancies, spontaneous labors with a normal puerperium. The test was done on the twenty-second day after delivery.

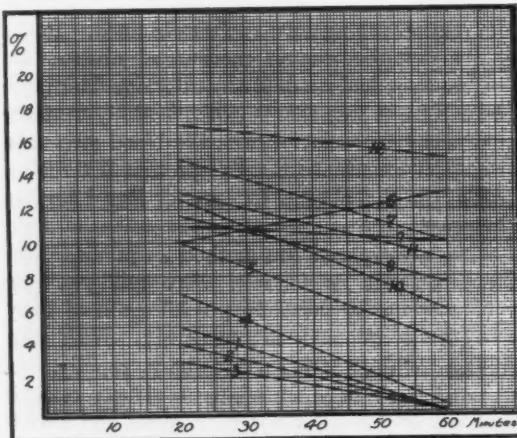
*Case 4.*—Chronic appendicitis and cholecystitis. Age 47. Gastric symptoms with pain in right upper quadrant for one year, and a loss of thirty pounds in weight. No history of jaundice, and no noticeable jaundice on physical examination. Operation was performed and the surgeon reported that the gall bladder was surrounded by fibrous adhesions and the liver enlarged. Pathological report on the gall bladder: Chronic cholecystitis.

*Case 5.*—Acute cholecystitis with gall stones. Age 64. Indefinite history of pain in the right upper abdomen for eight years with several attacks of acute pain of a colicky nature. Patient was admitted to hospital immediately subsequent to an attack of this nature. Operation: Gall bladder inflamed and distended to the size of a pear. It was found adherent to the great omentum, stomach and duodenum. Condition of the liver not reported.

*Case 6.*—Atrophic cirrhosis of the liver. Age 67. Gastric disturbance which began two months ago and consisted of pain in the epigastrium, worse after food. Severe hematemesis on two occasions. Blood constantly present in the stools. Abdomen distended, with bulging and moveable dullness in the flanks. x-ray report: Stomach and intestinal tract normal, liver shadow much diminished. Patient gave a history of the excessive use of alcohol.

*Case 7.*—Post-partum eclampsia. Age 25. Primipara. Urine negative for albumin throughout pregnancy. Blood pressure normal. She was delivered at home without laceration, after being five hours in labor, low forceps being used. Twenty-two hours after delivery she had a convulsion. On admission to hospital, patient was in a semi-comatose condition with a poor color and a very toxic appearance. Temperature 100, pulse 126, regular and of good quality, respirations 26. Urine: Acid, clear, specific gravity 1006, albumin, sugar, acetone and diacetic acid negative. Calcium oxalate crystals, and numerous pus cells present. Systolic blood pressure 138. Patient had eight convulsions in four hours. The convulsions were controlled by treatment but the patient died. This case is of especial interest, inasmuch as there were no pre-eclamptic signs or symptoms, no albumin in the urine and the blood pressure was approximately normal. The tetrachlorphthalein test, however, revealed a profound disturbance in liver function.

*Case 8.*—Post-partum eclampsia. Age 18. Primipara. Patient had not consulted a physician previous to



Numbers of the individual curves on the above chart correspond to case numbers in the text.

Determinations of dye retention were made on two specimens of blood, the first having been obtained twenty minutes after injection of the dye and the second at the end of one hour.

admission. She stated that she had noticed a slight oedema of the right ankle for the past week, but no other untoward sign or symptom could be elicited by questioning. Patient had a spontaneous labor and delivery was effected without instrumentation or internal manipulation. She complained of headache and five hours after delivery had a convulsion. She had two subsequent convulsions, regaining consciousness between each. Blood pressure 138-78, pulse 70-120, resp. 20. Urine: Normal in quantity, acid, 1008, albumin present in moderate amount, sugar, acetone and diacetic acid negative. Amorphous urates, a few hyaline casts and pus cells present. Under appropriate treatment the patient made an uneventful recovery.

*Case 9.*—Carcinoma of the liver.—gastric carcinoma. Acute abdominal symptoms due to perforation of carcinomatous mass in stomach, with peritonitis. Necropsy revealed an encephaloid carcinoma involving the whole of the pyloric antrum with numerous metastatic nodules in the liver.

*Case 10.*—Arterio-sclerosis, cardio-renal disease with failing heart. Age 63. History of a paralytic stroke fifteen years ago. Her feet have been swollen for the last two years. On examination the heart is enlarged, and the beats absolutely irregular. The liver was enlarged, two and one half inches below the costal margin. Urine showed albumin and numerous granular casts.

*Case 11.*—Chronic cholecystitis with cholelithiasis. History of several attacks of colicky pain in the epigastric region, radiating to the shoulder and associated with jaundice. On examination there was marked tenderness over the gall bladder region and the liver dullness extended one and one half inches below the costal margin. Operation: Cholecystectomy. Condition of the liver not noted on report. Pathological report: Chronic cholecystitis with gall stones.

*Case 12.*—Carcinoma of the head of the pancreas. Patient gave a history of persistent jaundice, pruritus and clay colored stools over a period of eight months. At operation the head of the pancreas was found enlarged and very hard, encroaching on the common bile duct so as to produce complete occlusion. Patient died from post-operative haemorrhage. At autopsy, the head of the pancreas was found enlarged and diffusely indurated.

On microscopic section the condition was found to be an adenocarcinoma. The liver was enlarged and bile stained but showed no gross evidence of secondary growth. Microscopic sections showed marked dilatation of the bile capillaries with marked increase of fibrous tissue in the portal spaces together with some round celled infiltration. No evidence of tumor metastasis.

#### SUMMARY AND CONCLUSIONS

The use of phenoltetrachlorphthalein is a distinct advance over previous methods of testing liver function. The method devised by Rosenthal, of estimating at intervals, the amount of dye retention in the blood, after intravenous injection, is superior both in ease of execution and accuracy of results, to the method of estimating excretion in the faeces. The former method gives the test a status of practical utility which it could not have attained as long as the original method prevailed.

The series of cases reported in this paper cannot be taken as conclusive evidence of the reliability of the test, but serve, merely, to show the possibilities of the method in a variety of liver conditions. The limitations of the test can only be discovered by a more general clinical application making available the joint experience of a number of workers.

#### LITERATURE

- 1.—Rosenthal: *J.A.M.A.*, Dec. 23, 1922, Vol. 79, pp. 2151-2154.
- 2.—Rowntree, Hurwitz and Bloomfield: *Johns Hopkins Hosp. Bull.* 1913, Vo., xxiv, p. 378.
- 3.—Abel and Rowntree: *Jour. Pharmacal and Exper. Therap.* 1: p. 231, 1909.

**The Transmission of Measles Through Transfusion of Blood.**—Though one of the most prevalent of epidemic diseases, measles has managed to leave many stumbling blocks on the pathway of the study of its causation. The virus has been sought in the blood, the throat, the nasal secretions and the lacrimal secretions of patients in various stages of the disease. Micro-organisms have been cultivated, from which symptoms have been obtained in experimental animals. Sellards' attempts to transmit the disease to apparently susceptible human volunteers, however, were unsuccessful. Sometimes the evidence that man has long endeavoured to secure through pre-meditated experiment is furnished by nature's experiments or by unprepared chance. This seems to have been the case at the Minneapolis

General Hospital, where for purposes of life-saving transfusion, in two instances, the blood from a mother subsequently discovered to have measles was injected into the circulation of her child and produced characteristic measles. Contact infection was excluded. The virus was found to be present in the blood at least two days before the appearance of the rash. Owing to the definiteness of the time of inoculation, the incubation period could be accurately established at thirteen and fourteen days. Since measles may be transmitted through transfusion of blood, Baugess regards it as advisable to take a careful history of those who are to be blood donors for young patients, and to look for Koplik spots.—*Jour. Am. Med. Assoc.*, May 3, 1924.

## Case Reports

### A CASE OF THROMBO-ANGEITIS OBLITERANS\*

ARCHIBALD MALLOCH, M.D., M.R.C.P. (*Lond.*)

*Assistant Physician, Royal Victoria Hospital,  
Montreal*

The patient, N. C., a Polish Hebrew, is 39 years of age, by occupation a tailor's machinist, requiring to control a machine by his feet. He came to Canada nearly twenty years ago. His general health has been good and he remembers no other disease except measles as a child and gonorrhoea at the age of twenty. He smokes six to eight cigarettes a day and therefore cannot be said to be a heavy smoker. He takes but little alcohol. His diet consists of "ordinary Canadian meals" and he eats little meat; he is not very fond of sweet things. His father died at the age of thirty-seven (pneumonia?). His mother is alive and well at sixty-five. He is out of touch with some of his sisters and his brother, but has not heard of their suffering from any symptoms similar to his own. His wife is alive and well; she has had two children and no miscarriages.

In the autumn of 1920 he was troubled for about five weeks with a feeling of coldness in the little finger of his left hand. There was no change in colour, but the hand was swollen the next day. After a month or so the same sensations were experienced in the right hand also. These were accompanied by swelling and sweating. He has had some difficulty in keeping his hands warm, especially the right first and little fingers, which become white as he rests them on the machine. I may remark that the history given above was elicited only after he had been asked if he had had anything wrong with his hand.

On several occasions in 1921, while in bed at night, he suffered from "pins and needles" along the inner aspect of the right hallux and the inner side of his foot. There was no swelling and no change in colour.

In September, 1922, the little toe of his right foot became painful from no apparent cause such as the squeezing of a tight boot. There was no reddening or discharge but the nail seemed to

be loose. At another hospital half of the toe nail was removed and some soft "matter" came away also. Healing was apparently good. Soon after this, his right knee began to ache especially on walking; this lasted for three or four days only.

On February 11th, 1922, he was admitted to this hospital under the care of Dr. Turner, complaining bitterly of pain in the little toe of his right foot, and this had to be amputated for infective gangrene. Healing was prompt and he was discharged on November 17th, with instructions to return to Surgical Out-Patient's for observation.

Since that time has noticed that the tips of nearly all his toes, especially the right hallux, have become red, and he has found that his toes turn blue on putting them into cold water. He has not been troubled with sweating of the feet. Since last autumn, the patient has had increasing discomfort in the calves and feet on walking, so that after going for two or three streets he has had to stop and stand first on one foot and then on the other for a minute or so at a time to ease the pain.

He was admitted again to this hospital under Dr. Turner, on May 26th, as the little toe of his left foot had become much more painful and was of a bluish-red colour.

The patient is a fairly well nourished and healthy looking Hebrew, and when lying in bed or in a wheel chair appears to be suffering no pain. There is no fever and the pulse is not increased. His teeth are in fair condition; the molars on both sides below are false. The pharynx is negative. There is no enlargement of the lymph nodes except the inguinal and femoral on both sides. The respiratory system is negative, the heart is not enlarged, the apex being in the fifth interspace, 8 cm. to the left of the mid line; the second sound at the aortic area is not accentuated. The abdomen is negative, the spleen is not palpable. The urine on June 2nd showed a specific gravity of 1.015, was acid, and no albumen or sugar were present, and no casts or pus cells were seen. Examination of the faeces was negative. There are no deformities about the joints. He is rather highly strung and all the reflexes are very active; otherwise the nervous system is negative.

There is some depression of the longitudinal

\*The patient was shown during a "Clinical day" (June 5 h, 1923) for the American Orthopaedic Association.

arches but the striking thing on examination of the feet, as the patient lies in bed, is the red and shining tips of his toes. The left little toe is bluish at the tip and this colour extends up for a short distance on either side. The skin on the inner aspect of this toe is broken. The feet are not swollen in this position and they are of normal colour. There is some cracking of the skin close to the nails. Dilated venules are visible on the outer side of the right ankle joint. The veins on the dorsal aspect are not prominent unless the feet are allowed to hang down over the edge of the bed, when, in less than a minute, they become very congested, stand out prominently, and the tips of the toes appear cyanotic, especially the left little one which becomes bluish-black in colour. When brought back to the horizontal position the feet assume the same colour as before in about a minute and a half. On elevating the legs vertically, the balls of the toes blanch in about one and half minute's time. Several minutes in the horizontal position, however, give to them the same colour as before. The right foot is a little cooler than the left; there is no sweating. Sensation to touch, pain, heat, and cold is not impaired. There is no tenderness, except in the left little toe. The superficial veins of the leg are not dilated and show no varicosity.

Pulsation in the femoral arteries is easily felt, but not so readily in the popliteal. Pulsation is very slight in the posterior tibials and the walls of the vessels here seem thickened. Pulsation in the left dorsalis pedis is felt, but not in the right one. The brachial arteries pulsate visibly, but the blood pressure, recorded by Dr. Hudson and myself on several occasions, is only 126-70 on the right side and 120-70 on the left. The radial arteries are not sclerosed. It is a much more difficult matter to take readings over the popliteals, but we agree on 180-120 for the right one, and 160-100 for the left. A skiagram of the legs shows no visible vessels between the knees and the ankles.

The red blood cells are 4,000,000 per cmm. Haemoglobin 80%; white blood cells, 8,000; differential count shows relative increase of lymphocytes, (polymorphs, 48%, lymphocytes, 42%, large mononuclears, 6%, eosinophiles, 3%, basophiles, 1%). Dr. T. R. Waugh reports that the viscosity of the blood is moderately high, the coagulation time is four minutes (within normal limits), the bleeding time is slightly decreased, and the blood platelets show no in-

crease (in number, 290,000 per cmm.) and are uniform. The Wassermann test of the blood is negative.

The amount of sugar in the blood was determined by Dr. MacIntosh, of Dr. E. H. Mason's metabolism department, before and after the ingestion of a hundred grams of glucose. The curve shows a very slight decrease in carbohydrate tolerance, not more pronounced than in some quite normal individuals.

*Diagnosis.*—The patient is a comparatively young Polish Jew, and in the absence of syphilis, of kidney, heart, or generalized arterial disease, and when diabetes can be excluded and the attacks are not typical Reynaud's disease, we think this is a case of thrombo-angiitis obliterans (or Buerger's disease) involving the deeper vessels of the feet.

*Comment.*—It is a disease almost peculiar to Polish or Roumanian Jews between the ages of twenty and forty, most of whom are heavy cigarette smokers. Leo Buerger described it in 1908 and wrote a good paper on the pathology in 1917. The cause is not definitely known, but it is thought to be toxic or infectious. The signs and symptoms are due to the gradual cutting off of the blood supply, the lesion in the first instance being an acute inflammatory process involving all the vascular coats of the deeper arteries and veins. Thrombosis follows, the thrombus is organized, and later perhaps canalized. Unlike arteriosclerosis, there is little or no permanent change in the media; later there is extensive periarteritis and periphlebitis, and the fibrous tissue may involve the accompanying nerves. A hypoplasia of the peripheral vessels has been noted in some specimens examined after amputation. The peripheral vessels of the upper limbs are occasionally thrombosed.

The course is variable and there may be intermissions when the circulation is re-established to some extent, but ultimately the clot generally reaches as high as the popliteal artery, but rarely as high as the femoral or iliac vessels. Gangrene of course follows the thrombosis.

*Treatment.*—This on the whole is unsatisfactory. All possible methods of sustaining the circulation in the legs and feet should be tried, Bier's treatment has helped in some cases. The operation of sympathectomy is advocated by some authorities. Meyer tries to reduce the increased viscosity of the blood by giving eight to ten quarts of Ringer solution daily through a duodenal tube. It is probably wise to reduce

the carbohydrate intake as decreased sugar tolerance is present in many cases.

In the subsequent discussion, one surgeon reported a good result after sympathectomy, and another had achieved some success with a combination of Meyer's method of treatment and the exhibition of increasing doses of the nitrates.

*Further note on the case.*—The late Dr. A. E. Garrow provided me with the following note:

"Handley's operation was performed on June 21st, 1923, under spinal anaesthesia. This involved exposing the femoral artery on the inside of the upper part of Hunter's canal for a length of three inches.

The portion of artery uncovered was rough, reddened and adherent to the surrounding connective tissue canal, whereas the vein was smooth, non-adherent, and showed no evidence of periphlebitis. Feeble pulsation was felt on palpation, but none seen on inspection. Five drops of 85% alcohol were injected into the adventitia of the artery at five equi-distant parts of the circumference of the vessel producing thereby a swollen, white tubular band, one and a half inches in length which completely surrounded the vessel. Hunter's canal was closed by cat-gut sutures, the sartorius muscle replaced and the skin wound closed by silk sutures."

At the end of forty-eight hours the pain in the foot had very largely subsided and the colour of the toes had assumed a more normal appearance, the glazed condition becoming dull. On July 13th the patient was discharged from the hospital. He reported to the Surgical Out Door department on July 19th, and Dr. F. McKenty noted that "examination of the toes shows marked improvement and the discolouration has nearly all disappeared. There is a slight difference in the temperature of the skin of the feet, the right being warmer. The fifth toe on the left side shows no evidence of previous gangrene."

The patient has not come again to the hospital and on enquiry it is found that he went to California six months ago.

---

#### A MIXED CELL SARCOMA OF THE KIDNEY IN A CHILD ELEVEN MONTHS OLD

F. M. FRY, M.D.

Montreal

*Patient.*—Percy Maynard, aged eleven months, was admitted to the Children's Out-Door De-

partment of the Royal Victoria Hospital on May 1st, 1911.

*Complaints.*—(Given by the mother), lump in the left side.

*Personal History.*—A full term child, seven pounds at birth apparently normal. No breast feeding. Horlick's Malted Milk was given exclusively in first eleven months. First tooth appeared at ten months. Had chicken-pox. Slight bronchitis two weeks ago.

*Present Illness.*—Two weeks ago a physician on examining the child found a mass in the left flank and the mother promptly brought him to the Royal Victoria Hospital. There is no history of passing red urine, or any disturbance whatever.

*Family History.*—Father and mother well. No history of tuberculosis, miscarriages, or cancer. Patient is the only child.

*Present Condition.*—A well nourished child. T. 99, P. 112, R. 28. All systems negative. Urine acid, clear amber, 1030, no albumin, no sugar. Microscopically: no red blood corpuscles, few pus cells and slight epithelial debris. No general lymphadenitis.

*Examination.*—On examination of the abdomen a hard mass about the size of one's fist was readily found in the left upper quadrant, which bulged markedly more prominently than the right. This mass is roughly quadrilateral and extremely hard. It moves vertically up and down with respiration, has no notch apparently and bowel tympany can be demonstrated in front of the mass. Sarcoma of the kidney seemed the only diagnosis possible. Liver negative.

He was transferred to Dr. Garrow's service who, a week later, removed the tumour and Dr. Gruner of the Pathological Department pronounced it on microscopic section a mixed-celled sarcoma.

Recovery was uninterrupted and he was discharged well on June 15th (five weeks after operation).

He was re-admitted November 7th, 1914, T. 102, P. 125, R. 44, and found to have pleural effusion which one feared indicated metastasis. Thoracentesis, however, revealed a clear straw-coloured fluid ( $\frac{1}{2}$  vi) of high specific gravity, no blood; no growth on ascitic fluid, no tbc. bacilli, antiformin method. Of 200 cells counted there were:

Polymorphonuclears, 4.5%.

Endothelial cells, 7.5%

Lymphocytes, 88%.

No sarcoma or cancer cells.

He was later re-admitted for examination of his kidney function. The urine was normal in amount, 40 oz. a day, high specific gravity, no albumin, no sugar; microscopically normal and phthalein test quite normal, nearly 70%.

We have kept in touch with him since and show him to-day a healthy, hard working boy, twelve years after operation.

---

#### HYDROCEPHALUS COMPLICATING INTRACRANIAL HAEMORRHAGE IN A NEW-BORN INFANT

S. G. Ross, M.D.

Montreal

The case here reported illustrates the possibility of recovery after severe intracranial hemorrhage at birth.

Male infant, age 4 days. Born February 9th, 1923, in the Montreal Maternity Hospital.

*Family History.*—Mother tuberculous, but disease arrested. Primipara.

*Personal History.*—Full term. Fairly easy labor. Low forceps used. No asphyxia at birth. Was kept on "forceps orders", i.e. absolute quiet for first two days. On February 11th, patient who had shown no symptoms of cerebral injury was put to breast. He vomited once on that day. On February 12th, the temperature was 101. He was nursing and taking supplemental feedings well. On February 13th, I was called to see the child as he had had several attacks of cyanosis accompanied by shallow and irregular breathing. One attack was severe and required administration of oxygen.

*Present Condition.*—Patient is a small infant. He lies in bed in an apathetic condition. The body is limp. There is no cyanosis. Cry weak. Skin somewhat dry. The head is normal and shows no signs of injury. Fontanelle flat and not tense. Pupils equal. No meningismus. Respiration regular but somewhat shallow. Heart and lungs normal. No cutaneous haemorrhage or bleeding from mucous membranes. Abdomen negative. Cord clean. Deep reflexes normal. Subcutaneous salines were ordered for the slight dehydration.

*February 14th.*—Not nursing well. This afternoon showed definite generalized muscular twitching. He has had several attacks of cyanosis. The deep reflexes are increased. Fontanelle bulging. Breathing irregular. Cry is somewhat

meningeal. The eyes show nystagmoid movements. The patient shows definite signs of increased intracranial pressure and cortical irritation.

A lumbar puncture was done and 8 cubic centimeters of bloody fluid obtained. This fluid did not clot on standing. The bulging of fontanelle was reduced by this withdrawal. The patient was given chloral gr. ij by rectum and kept absolutely quiet.

*February 15th.*—The fontanelle is slightly bulging and tense. Twitching of muscles of limbs and face. No further attacks of cyanosis. Taking feedings well.

*February 16th.*—Patient has had definite left-sided convulsive movements at times. The sutures of skull bones are slightly separated. Circumference of head 36 centimeters.

*February 17th.*—Slight vomiting. Fontanelle tense. Sutures separated more widely. Circumference of head 36.5 centimeters. Lumbar puncture—18 cubic centimeters of blood stained fluid withdrawn. This did not completely reduce the tension of fontanelle.

*February 18th.*—Temperature 101. Child vomiting forcibly. Head 37.5 centimeters in circumference. I made a ventricular puncture on the right side. No fluid was obtained. Repeated this on the left side and withdrew 40 c.c. of bloody fluid. Following this the circumference of the head was reduced to 36.5 centimeters and the fontanelle was sunken.

*February 21st.*—The patient's condition has shown improvement. There have been no more muscular twitchings or attacks of cyanosis. Less vomiting. Temperature 102. Circumference of head 37.5 centimeters.

*February 22nd.*—Temperature 100. Circumference of head 38 centimeters. Vomiting more severe. Patient's head assuming a definite hydrocephalic appearance. The eyeballs show downward displacement.

*February 25th.*—Condition has become stationary. No pressure symptoms except vomiting. Child much emaciated. He was put to breast again today.

*March 4th.*—Patient has been weaned as he refused to nurse. The circumference of head has increased to 39 centimeters. Sutures are widely separated. There is some head retraction. Vomiting persists. Takes only 1 to 1½ oz. at a feeding.

*March 18th.*—Discharged from hospital on March 9th. For the past two weeks condition

has remained stationary. The circumference of head is 39 centimeters. The vomiting persists although different types of feeding have been tried.

After this date the family physician took charge of the patient. Three months later I was called to see him in consultation. The mother gave the history that after remaining in very poor condition for several months he began to show gradual improvement. The vomiting lessened and he began to gain weight gradually. Weight  $8\frac{1}{2}$  lbs. (4 months of age). Feeding—milk 18 oz. Water 18 oz. Sugar  $1\frac{3}{4}$  oz. daily. On examination there was a marked change in the appearance of the child. The head still showed a slight hydrocephalic appearance. The eyeballs were not turned down. The circumference of the head was 40.5 centimeters, an increase of only 1.5 centimeters in three months. This is less than the average increase for this period and shows a relative diminution in the size of the head. The fontanelle was wide but flat. The sutures were almost closed. The infant appeared bright and noticed objects. One felt justified in giving a good prognosis to the mother.

The child was not seen again by me until March 1924 at the age of 13 months. He had made steady progress since last seen. Development has been normal. He is now a bright active child who stands alone. His mentality is normal. He has six teeth. Length 65 centimeters (normal 75 centimeters). Well developed, although slightly under weight. Circumference of head 46 centimeters (normal for age 45 centimeters). Anterior fontanelle measures 2 by 2 centimeters. Sutures closed. Position of eyes and shape of head are normal. He has had no cerebral symptoms and there is no spasticity.

*Discussion:*—Several points are brought out by this case. An intracranial hemorrhage occurred complicating a normal labor. This was diagnosed by signs of increased intracranial pressure and cortical irritation coming on in the first few days of life. It was confirmed by lumbar puncture. This brings up the question of the advisability of doing a lumbar puncture in all cases where signs of cortical irritation are present. It is well known that small cerebral and meningeal hemorrhages are common at birth. This has been shown by examination of the brains of infants dying of different causes during the first few days of life. In many cases therefore recovery probably takes place with no after effects. In addition we know

that many new born infants who show signs of cortical irritation at birth recover perfectly. It is quite conceivable that in cases with slight hemorrhages the manipulation and struggling incident to lumbar puncture would increase the intracerebral venous pressure to such an extent that fresh bleeding from a small torn vessel might result. The conservative and logical method of treatment in these mild cases is absolute rest and sedatives. Oxygen may be given to relieve the cyanosis. Only when pressure symptoms become severe, as evidenced by vomiting, bulging fontanelle, slow pulse and marked interference with the respiratory centre, should lumbar puncture be done. The value of this measure is to establish a diagnosis and if possible to relieve the pressure symptoms. In my case this relieved the symptoms temporarily. They returned however and a second lumbar puncture did not completely relieve the pressure. As the patient was developing a hydrocephalus and the fluid could not be drained by lumbar puncture it was felt advisable to do a ventricular puncture. The removal of the pressure symptoms for the time being showed the value of this procedure. It also established the diagnosis of intraventricular bleeding. Probably bleeding occurred as well upon the cortex. This cannot be proved.

What will explain the development of hydrocephalus? It was not congenital. It followed quickly after intracranial hemorrhage, part of which at least was intraventricular. It was not relieved by lumbar puncture which suggests that the passage of spinal fluid from the ventricles into the spinal fluid from the ventricles into the spinal canal was blocked. A probable hypothesis is that some of the blood clotted and blocked the circulation of spinal fluid at some point between the lateral ventricles and the neighborhood of the foramen of Magendie, interfering with its absorption by the arachnoid veins over the cortex. Partial organization of this clot may have taken place. To explain the spontaneous recovery it is necessary to assume some reabsorption of the clot and establishment of a passage for the free circulation of the spinal fluid again.

In this case lumbar and later ventricular puncture relieved the pressure symptoms which endangered life. Possibly it prevented permanent damage to the cortex.

As to the future of this child there is after the lapse of a year no evidence of residual damage to the brain and while it is early to make a definite statement the prognosis seems good.

## Retrospect

### VITAMINS\*

H. E. MACDERMOT M.D.

*Montreal*

The complexity of the component factors in our existence is steadily being revealed. Our daily bread is one such factor: until of late years we have looked upon it as something regarding which we had an almost instinctive knowledge, and it is somewhat in the nature of a disillusionment to find that this instinct is not infallible. It did not serve, for example, to keep the coolie from eating milled rice, nor even hint to him that from thence arose his beri-beri. So that the history of our interest in vitamins is to some extent bound up with the developments in modern treatment of food whereby the appearance or taste has been altered at the expense (unknowingly) of its nutritive value.

We have long looked upon food as consisting of four fundamentals, protein, carbohydrate, fat, and inorganic material; but whenever it has been attempted to combine these units to form a diet sufficient for growth or life, failure has resulted. This was noted as early as 1881 by Lunin. He was investigating the place of inorganic salts in nutrition, and he found that whilst mice could live for months on a diet of milk, they soon died if fed on a diet composed of what he believed to make up the milk, *i.e.*, caseinogen, fat, lactose, and salts. He therefore concluded that there must be other indispensable substances in the milk. Some thought, in explanation of the failure of such diets, that it was due to the monotony of the food; but milk diet, of equal monotony, succeeded where the other failed. Nor was it because these diets lacked flavour, for the addition of suitable flavouring did not alter matters. Whenever anyone apparently succeeded in satisfying the nutritive requirements of animals by isolated and purified food components, close analysis showed some fault in the technique of the experiments.

Then experiments began to be made which showed that if even quite insignificant amounts of milk, for example, were added to such artificial diets, normal and continual growth was

attained. These experiments were first carried out by Hopkins in England, in 1906, and his conclusions carried him to a stage beyond which we have not greatly advanced in the last 18 years. He "realized that what is absent from artificial diets and supplied by such addenda as milk and tissue extracts is of the nature of an organic complex (or complexes) which the animal body cannot synthesize. But the amount which seems sufficient to secure growth is so small that a catalytic or stimulative function seems more likely." These substances he termed "accessory factors of the diet." They were not recognized in current views on nutrition, but neither was it fully recognized even then that animals might receive all the formative matter and energy sufficient for growth, and still might not grow.

The next step in defining these accessory food factors was the discovery that they were quite certainly of more than one kind, and in 1915 McCollum and Davis summed up the situation as follows: "There are necessary for normal nutrition during growth two classes of unknown accessory substances, one soluble in fats and accompanying them in the process of isolation from certain food-stuffs, and the other soluble in water but apparently not in fats." They called these substances "fat-soluble A" and "water-soluble B," in preference to Funk's term "vitamine," which was open to certain criticisms. But language, even in science, is not so easily wrought to our desires, and the terms "vitamin A" and "vitamin B" have gradually come to be used. The omission of the terminal "e" is in accordance with the system by which it is desired to show that the substances in question are not definitely known to be bases.

Growth and nutrition of the animal organism, then, depends beyond all doubt, on the presence of two distinct substances in the food, one of these being soluble in fat and the other in water. But a third accessory factor is to be added, and this is the antiscorbutic factor, vitamin C. It is quite certain that this factor is indispensable for the nutrition of certain species of animals, but in our present state of knowledge we cannot say that it plays such a generally indispensable part as do the other two substances.

We know that vitamins are chemical entities, but we are still ignorant of their exact chemical

\*The Medical Research Council's Report on the Present State of Knowledge of Accessory Food Factors (Vitamins). H.M. Stationery Office, London, 1924. 4s. 6d.

nature. We are sure only of the existence of three, but recent discoveries suggest that these do not exhaust the list. As to the quantity contained in food it is not one of their least striking features that they manifest a degree of activity which is highly disproportionate to the minute amounts occurring in a normal diet. This peculiarity it is which marks them off from the foodstuffs, and suggests their action to be that of a catalytic agent. There is evidence to suggest that they are formed largely, but not entirely, in the tissues of plants, whence they pass into the tissues of herbivorous animals and become available for carnivora: they cannot be synthesized in the animal. While they may be distributed in plant or animal tissues in a partial and irregular manner, it is safe to say, speaking broadly, that our food will have sufficient vitamins if it is reasonably varied, has not been artificially separated into parts, and has had no destructive influence applied to it.

*Vitamin A.*—The actual extent to which vitamin A is concerned in the nutrition of the body is only partially understood. There is every reason to believe that much of it may be stored in the body, perhaps in association with the reserve fat supplies, a point of extreme importance in the case of the pregnant or nursing mother.

The richest source of supply is quite unquestionably the liver of the cod and many other fish, and here as in the case of mammals, the vitamin is built up from the vegetable kingdom. It has been shown that marine algae can synthesize very high concentrations of the vitamin, if grown in sterilized sea water, in the light: these algae are devoured by the smaller forms of marine life which are the food of larger types, which in turn are eaten by the cod, etc.

It is soluble in fat solvents, *e.g.*, ether and alcohol. Heat alone does not greatly affect it, unless there is exposure to air or oxygen at the same time, in which case rapid destruction takes place. Ozone alone will produce the same effect. Hence, certain fish oils prepared under steam at high pressure, may yet retain a great deal of the vitamin. It is to be noted that the more darkly coloured cod liver oils do *not* contain more of this factor than the colourless oils. One substance at least whose vitamin content is seriously affected by the method of preparation is lard. The fat of the pig can be shown to contain it, but the refining process inactivates it.

As regards isolation, it has been found that if

fat is saponified—in absence of air—there is a residue; this contains cholesterol and certain bases, and with the removal of these the remaining fraction is found to have the properties of the vitamin. Certain colour tests are also of some value in demonstrating its presence. A purple colour will be given by dissolving codliver oil in an organic solvent and adding sulphuric acid, and this reaction occurs in a great many oils and fats which are known to contain vitamin A. The reaction disappears, however, if the fat be heated in the presence of air, but remains if heated without air. Such facts are at least significant. On the other hand, the reaction does not take place with the marine diatom and plankton oil, in which, as has been stated, rich supplies of the vitamin are known to exist.

*Vitamin B.*—The chief sources are the seeds of plants, *e.g.*, cereals and edible pulses, yeast, and eggs of birds. It is now well established that, as a rule, amongst the cereals, the factor is chiefly concentrated in the embryo or germ; next in importance of content is the bran (pericarp) or envelope. It apparently exists free in the plant cell. We do not know under what conditions the synthesis is carried out. On the whole there does not appear to be a reserve store in the body.

Considerable uncertainty exists as to the vitamin B content of milk; the diet of the cow is a factor of considerable importance. But it is at least certain that the various forms of condensed and dried milk contain as much of the vitamin as may be in the fresh milk. The processes of preparation in this case do not cause deterioration. Yeast is rich in vitamin B, and is not affected by autolysis or extraction.

This factor withstands desiccation for long periods, as may be appreciated from the fact that it is found so largely in dried foodstuffs. It also withstands heat very well up to 100° C., but deteriorates rapidly at 120° C. In the baking of bread, therefore, there is no great loss of the vitamin. In preserving and canning, however, the temperatures employed are usually well above 100° C., and foods so treated should therefore be regarded as containing none of this vitamin. It does not seem to be affected by oxidation, nor by ozone or ultraviolet light. It resists hydrolysis and acids; is dialyzable, and passes through collodion membranes which are permeable to semicolloidal substances. It is soluble in water, and can be extracted with alcohol.

Much work is still necessary to clearly make

out its effects on the secretory power of glands, its relation to other food constituents, as well as to the growth of fungi, yeasts, the higher plants, and bacteria. Investigations are being carried on which indicate that the functions dependent on this factor are of wide extent, although at present our attention is most closely concentrated on its anti-neuritic function.

**Vitamin C.—(Antiscorbutic Vitamin):** In general, this is found in living tissues in which metabolism is taking place, such as fresh vegetables and fruit. The cabbage leaf is one of the richest sources, as is also the juice of raw swede turnips. Amongst the fruits the orange and lemon are the most valuable anti-scorbutics. There is a marked difference in the vitamin content of lemon and lime juice, the latter being distinctly inferior; if of the preserved kind it is almost quite devoid of the factor. Preserved lemon juice is more satisfactory. Oranges and lemons if kept in the cold will retain their potency for six months. Tablets can be prepared from their juices which retain the anti-scorbutic properties completely.

Tomatoes are rich in the factor. Milk contains it in very variable quantities. Meat con-

tains but little, and its well attested capacities as an anti-scorbutic seem to depend on large quantities being eaten. Patients have developed scurvy even when meat was included in their diet.

As with vitamin A, heat is detrimental, in the presence of oxygen, and it is also to be noted that temperatures from 80° to 100° C. cause great deterioration, a fact to be borne in mind in estimating the anti-scorbutic value of cooked vegetables. The canning of vegetables causes great loss of potency, but not so much in the case of tomatoes, unless these have been exposed to the air in the process, as in making of puree. Drying causes almost complete loss of the factor, but fruit juices will not be so much affected if evaporated *in vacuo*.

It is not often that we receive publications so admirable in every respect as the Medical Research Council Report on which the foregoing remarks are based. It contains material of very great value to medical men, and brings up to date in a very clear manner knowledge which has not yet been so made available to the general practitioner.

---

**Ménière's Syndrome Caused by Allergy.—** W. Duke, Kansas City, Mo., has observed Ménière's syndrome in two patients with severe allergy in whom no other adequate cause for the illness was found. Since, in each case, relief was obtained both by the use of epinephrin and by the avoidance of substances to which the patients were sensitive, and since the symptoms were reproduced during well periods by the use of foods to which they were hypersensitive, it seemed justifiable to Duke to include allergy among the primary causes of the symptom complex known as Ménière's syndrome.—*Jour. Am. Med. Ass.*, Dec. 29, 1923.

---

**The Lens as seen with the Gullstrand Slit Lamp and Corneal Microscope.—** By carefully considering the facts presented, Arthur J. Bedell, Albany, N.Y., asserts that it is possible to observe embryologic, physiologic and patho-

logic lens changes. It is essential that the technic of examination be mastered and that the changes noted be given their proper value. The visualization of cataract formation is so real that, although heretofore the lens has been the most difficult part of the eye to study pathologically, it is now comparatively easy. To see a cataract develop in a recent detachment of retina proved a most instructive experience, for first there was a faint posterior cortical haze which increased in density and surface involvement, and then the anterior cortex showed many oil globules and fan-shaped opacities. Finally, the entire lens was milky white. The economic importance of lens capacity is so great that any aid in the elucidation of cause must have an influence of wide range. The slit lamp makes it possible to study lens changes so completely that it may safely be said that, within the next ten years, the therapeutic sphere will be greatly enlarged—*Jour. Am. Med. Ass.*, Feb. 2, 1924.

## Editorial

### THE ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN PHYSICIANS.

FOR thirty-nine consecutive years, the *Association of American Physicians* has met in order to present before its distinguished members such work of importance as is deemed worthy of note. On nearly every occasion, some outstanding work heralds a new advance in scientific medicine, and the present year was no exception. Indeed, a number of very interesting and illuminating contributions showed that the activity in medical laboratories and clinics has by no means diminished.

The Koher medal for the advancement of scientific medicine in recent years was awarded to Dr. H. Noguchi.

The most interesting communications of the present meeting were those concerning the treatment of scarlet fever, its prevention and cure, and in this connection, the work of Drs. G. F. and Gladys Dick, as well as that of Dr. A. R. Dochez, may be considered epoch-making. By means of specially prepared antistreptococcal serum, this much dreaded disease may now be kept under control, serious forms of the malady can be cured and the death rate will be very considerably reduced as soon as this new form of treatment has become public property. Already the evidence presented by these discoverers has received the universal commendation of the Association.

It was further interesting to note the different opinions expressed in reference to the iodine treatment of various forms of thyroid intoxication, the conclusion being that this method of therapy has not as yet been established on a scientific basis, although its value as a cure in some special cases is generally recognized.

The various communications on diabetes illustrated in a very interesting manner the advances that have been made during the last year, more especially how insulin has affected the diabetic tolerance, and how the type of patient with diabetes has entirely changed with this new form of treatment. The "erstwhile dead" as Joslin aptly expressed it are now being carried along with comfort and with a life of usefulness.

A very important paper was contributed by Dr. W. A. Baetjer on the prevention of constitutional reactions in the treatment of various forms of disease by desensitization—the essential feature being the method of dosage—more especially in the transitional periods.

A symposium on "Respiration" formed one of the chief features of the meeting, and a number of members, who can speak with authority on this subject, presented the modern aspects of respiration, the exchange of gases, and the relation of respiratory functions to the circulation of the blood and the tissues.

A distinct advance seems to have been attained by Dr. Rountree in the treatment of Addison's disease by organotherapy; whereas, on the other hand, rather pessimistic views were entertained with reference to the cure of leukemias by irradiation, as well as on the means of establishing an early diagnosis of gastric cancer.

The transactions of this meeting will make a volume of unusual interest to the medical profession. A detailed report of the meeting is presented to our readers among the reports of societies.

## CAPILLARY PULSATION

IT has been remarked that in the history of our knowledge of the circulation there has been a widening of interest, from the centre to the periphery: the heart first was the main object of attention, then the arteries and the arterioles were shown to play an active part. But only of late years has there been generally attributed to the capillaries a function beyond that of being merely passive channels allowing for interchange through their walls. The work leading up to this development in our knowledge is worthy of particular attention, and only in passing is reference now made to a most fruitful source of information on the subject, *viz.*, Professor Krogh's "Anatomy and Physiology of the Capillaries." At the present we have before us a recent paper by Sir Thomas Lewis on certain aspects of the capillaries and arterioles, aspects which lend themselves especially well to investigation by clinical and experimental methods.

In his opinion, capillary pulsation can no longer be regarded as a sign of aortic regurgitation. It is known to occur in perfectly healthy persons, and it can be easily made to appear in normal people under special physiological circumstances. If, for example, the hand is soaked in hot water for three minutes, at a temperature of 45 to 47 C., there ensues a dilatation of the arterioles and also of the capillaries and venules; and it can be proved that this dilatation takes place independently in either case, and also that the reaction is a local one. Capillary pulsation is found to exist in such reddened areas. Further, there is evidence to show that it is the condition of the arterioles which determines whether or not capillary pulsation will occur: it is not the force of the heart beat, or the pressure in the larger arteries which is responsible. For, if the arm be laid in

a hot bath, with the fingers projecting above the level of the water, no capillary pulsation will be noted in them, although at the same time examination shows that the volume of the ulnar and radial arteries is increased. In this case, the arterioles of the fingers have not been dilated. The effect of temperature in capillary pulsation can be strikingly shown by cooling or warming given spots in an area displaying it; in the cool spots it disappears; in the warm it is accentuated. Again, the lobe of the ear is usually cool or cold, and pulsation is not seen there even when known to exist elsewhere in the patient. Application of warmth to this area however, readily brings out the pulsation.

With these facts in mind Sir Thomas Lewis suggests that the phenomenon should be regarded as a test of conditions existing in the arterioles, although he points out that the degree of pulsation will be increased when there is a high pulse pressure. If, in the presence of normal or heightened pulse pressures capillary pulsation in the hand is not produced on soaking the hand as described, the arterioles are probably incapable of dilating.

As the colour and temperature of the skin are largely controlled by the state of the arterioles, when the tone of the capillaries and venules is normal, it would presumably follow, in a case of free aortic regurgitation with a skin of ordinary colour and temperature, that the arterioles were dilated. The question of colour in aortic disease is therefore of some importance. In his experience, if there is pallor, as there so frequently is, it is due to the associated complication of infective endocarditis.

H. E. M.

---

The Sidney Ringer Lecture on Studies of Capillary Pulsation, with Special Reference to Vaso-dilatation in Aortic Regurgitation, *Brit. Med. Jour.* April 26th, 1924.

## ON THE ACTION OF RADIUM AND X-RAYS

FOR a long time after the destructive effects of x-rays and radium on various kinds of pathological cells had been ascertained, attention was concentrated on this action rather than on the physiological effects of radiation on tissues in general, and it is only within the last three or four years that the dangers attending the use of gamma rays are being fully revealed. While superficial damage to the skin was the first effect to attract general notice, the damage done to the deeper structures including the blood forming organs by the more penetrating types of x-rays and the gamma rays of radio-active substances has attracted attention.

In the *Lancet*, March 15, 1924, Dr. E. C. Dodds and Dr. Douglas Webster present an interesting study of the metabolic changes associated with x-ray and radium treatment. Its aim was to determine what were the essential biochemical changes involved in radiation toxæmia, and appraise correctly the three factors which might complicate the results, viz., the disease in question, the effect of treatment on the disease, and finally the effect of the rays on the patient's metabolism. Four clinical groups of disease were investigated. The patients, on whom the investigations were to be carried out, were kept in bed and maintained on a specially arranged diet; while the urine collected in 24 hour specimens was carefully analyzed for urea, uric acid, ammonia acidity, total nitrogen, ammonia coefficient, phosphates, chlorides, creatinin, and diastase. The result of the investigations coincided in a remarkable degree with those obtained experimentally in animals by the American observers Warren and Whipple.\* The changes in metabolism were closely similar whether x or gamma rays were employed and were found to vary essentially with the site radiated. Radiation of head, thorax or limbs produced no appreciable change in metabolism. Radi-

ation of the cervical region produced no change other than an immediate fall in the urinary creatinin, attributed to temporary paralysis of the parathyroids. On the other hand, radiation of the abdomen produced definite urinary and blood changes, changes which they deemed could be best explained by the supposition that a temporary inhibition of function takes place in the three principal abdominal glands, viz., the liver, pancreas and kidneys.

The experiments of Warren and Whipple, however, would indicate that in radiation of the abdomen the intestinal epithelium is apt to suffer severely. It appears to be at least as sensitive as the epithelium of the skin. They report that in animals it is easily injured by the more penetrating rays, and ulceration may be induced that is as difficult to heal as the familiar skin lesion.

At a meeting of the Electro-Therapeutic section of the Royal Society of Medicine (*B.M.A.J.*, March 29th, 1923) the clinical results obtained in deep x-ray therapy were discussed. The much vaunted Erlangen technique came in for full discussion. Its many ardent advocates in the early period of the method were found to have greatly modified their views. An analysis of the suitable cases treated showed evidence of cure in a surprisingly small percentage. When the method was first announced, writers in the press claimed that cures had been effected in 88% of those treated. Such results were by all the speakers denied. The technique adopted was also severely criticised, for it subjected the patient to a severe strain by the administration of what was stated to be the lethal carcinoma dose, unfortunately in many cases given quite irrespective of the condition of the patient. So severe was the strain, owing it was said to changes in the blood after an exposure, that it was necessary to allow a period of approximately six weeks to elapse before another exposure could be given. The results in the end were not satisfactory,

\*WARREN S. L. and WHIPPLE E. H. Roentgen Ray Intoxication, *J.A.M.A.*, Nov. 17, 1923, vol. 81, p. 1673.

and it is obvious that much further research work is required.

In all operable cancerous growths it is evident that surgery must still be the first choice. Radiotherapeutic measures do not at present offer the patient so good a chance of obtaining freedom from the disease as does surgery, but radiation should be employed after the operation to supplement the effort of the surgeon by diminishing the tendency to recurrence. It was admitted by all that the best treatment in the majority of cases of cancer at the present time is this combination of surgery and x-rays or radium rays, or even a combination of the three.

Dr. Russ reports the attempt to induce immunity and thus check the growth of cancer by another method. This method is based upon the accumulating evidence

that the body in cancer possesses some power of protecting itself against the disease, and that the production of immunity is in some way bound up with cancer cells and can experimentally be induced by irradiating cancer cells within the body. To attain these ends a method has been introduced which briefly is as follows. The growth is removed surgically, minced with the strictest aseptic precautions, and given a suitable dose of radiation. A small amount of the resulting pulaceous mass is then introduced beneath the skin. The hope is that in this way a degree of immunity in cancer patients may be induced. This plan is at present on trial and certainly deserves very careful consideration.

NOTE.—This work was presented before the Medical Society here last year.

---

## THE EFFECT ON THE KIDNEY OF THE MODERN TREATMENT FOR SYPHILIS

THE effect on the kidney of the modern treatment for syphilis has been considered carefully in theses for graduation submitted to the faculty of the University of Minnesota by Dr. A. R. Macfarlane, a copy of which appears in the April number of the *American Journal of the Medical Sciences*. The treatment for syphilis resolves itself largely into the use of mercury and arsphenamine both of which seriously irritate the renal parenchyma, interfere with its activity, and are liable to induce a temporary pathological condition with degeneration of the tubular epithelium, as indicated by the presence of casts, albumin, and pus in the urine and a definite interference with normal renal function. The writer in this paper presents us with a statement of what he has observed of the action of these antisyphilitic drugs on normal and abnormal patients, the relative damage done to each, and the relative permanency of the damage. Mercury seems to be the less desirable

because of its slow action and high renal toxicity. Arsphenamine on the other hand has the advantage of rapid action on the spirochaetes and less toxicity on the kidney. In 271 courses given to 128 patients who had previously normal kidneys and who reacted definitely to treatment, 46 per cent. had hyaline and granular casts under combined arsphenamine and mercury treatment; 16 per cent. had a definite amount of albumin and 15 per cent. a marked increase in pus cells under intensive treatment. In no case, however, was there evidence of severe renal damage. During the course of treatment there was a tendency for the number of casts to increase as the treatment progressed, in 55 per cent. and to decrease in 20 per cent. It did not appear, however, that at the end of the course any serious renal damage resulted; provided a sufficient rest interval was allowed between the courses.

An attempt was made to determine the relative parts played by arsphenamine and mercury in this renal irritation.

It was found that marked renal irritation was decidedly more common in patients under mercurial treatment alone than under arsphenamine alone. When a period of one month or longer intervened between the mercurial courses only 20 per cent. had casts and albumin, whereas if the rest period was shorter 80 per cent. showed urinary changes.

It appears therefore that the kidney under noncumulative mercurial treatment practically recovers from extensive mercurialization about a month after the drug is stopped, and signs of renal irri-

tation disappear completely if sufficient time is allowed between the courses.

Arsphenamine when properly prepared and given alone causes only slight irritation. Neo-arsphenamine causes even less.

Patients with damaged kidneys show a greater amount of reaction to the treatment, but with care recovery will be satisfactory. There is a tendency, however, for more severe reactions to occur as treatment progresses but if sufficient time for recuperation is given, no important renal damage is likely to ensue. Age as such is not a contra indication to treatment.

#### INFLUENCE OF ALCOHOL ON THE VITALITY OF THE RACE

THE opinion of the profession on the action of alcohol and on its value as a beverage, a food, and a therapeutic agent has varied greatly from age to age. During the middle of last century it was regarded not only as a valuable food but also under conditions of exhaustion and impaired nutrition, as a circulatory stimulant. This opinion, owing to the results of careful investigations by chemists and physiologists, has, during the few past decades, been greatly modified, if not altogether reversed.

A new phase, however, of the action of alcohol on racial development has been placed before the profession by Dr. Charles Stockard of Cornell University, who asks in a recent article, (*American Journal of Medical Sciences*, April, 1924,) whether the use of alcohol during past generations has actually injured the physical and mental quality of the present generation, or whether its use in the past centuries, when it was taken in what we now regard as excessive quantities, has not actually benefitted the present generations by the elimination of elements tending to racial degeneracy? During the past thirteen years Stockard has conducted a continuous experiment with the object of determining whether severe alcoholism continued over a long period of time would modify the course of normal development, and whether such

treatment would affect the germ cells of the species.

Guinea pigs were used as the animal material. More than 100 carefully selected pigs were systematically treated with alcohol for prolonged periods at a time, and the records are now available from their offspring, amounting to more than 5,000 animals. Pedigreed guinea pigs were used, obtained from eight different sources, and before the treatments were begun the animals were mated in order to test their fertility and the quality of offspring. They were then separated into control and experimental groups. To avoid the irritating effects of alcohol on the digestive tract it was administered by inhalation in special tanks to the point of intoxication for six days per week and for various lengths of time, to the animals selected. Several groups were treated for as long as six years and certain of these treated animals have lived to become more than seven years old, which is a long life span for a guinea pig.

Administered in this way alcohol does not appear to injure the health or activities of the treated guinea pigs or in any way shorten their life. The records, however, of the offspring and later descendants of these alcoholic guinea pigs, indicate that alcohol undoubtedly affects the germ cells in a very definite way.

Striking data were obtained when issue from male parents who had been subjected to the effects of the alcoholic inhalations were compared with that from sires untreated with alcohol; the same mothers producing the offspring. The records showed that there was a mortality of 17.4 per cent. among the offspring of those who had had no alcohol, but a mortality twice as high (35%) in the offspring sired by alcoholic fathers. Nine of these latter were also defective. A similar result was obtained when the offspring of normal guinea pigs mated with alcoholic mothers were compared with the offspring of non-alcoholic mothers. The experiments taken as a whole always gave substantially the same results. In a total progeny of 1,187 pigs with an alcoholic ancestry, the average litters of living pigs were also less numerous than those of the non-alcoholic. The alcohol appears also to have produced an earlier elimination by pre-natal death of the weaker embryos, but the size of the individual at birth was not very different from the controls; the total mortality, however, among the pigs under maturity was almost twice as great for the descendants of alcoholics as for the normal untreated control animals, *viz.*, 180 against the control 100. A point of importance, however, is that instead of the total mortality among the alcoholic progeny being divided into a 50-50 prenatal, post-natal ration, as occurred among offspring of the normal control, the pre-natal deaths were double the post-natal deaths. Alcohol thus appears to have destroyed the weaker embryos who, under normal conditions, might have survived, and this elimination has taken place chiefly during intra-uterine life. While some weak embryos of normal control stock die before birth, many survive and all do not die during early life. These weaker embryos are thus eliminated from the alcoholic stock, and only the resistant or strong individuals survive among the fewer offspring produced. Alcohol appears thus to act as a selective agent, eliminating the less hardy embryos from the stock. From the re-

sults obtained in his experiments, Stockard infers that parental alcoholism doubles the elimination of the weaker members of the progeny. The pre-natal mortality induced by this definite action of alcohol on the embryo is strikingly manifested during the next few generations in which the pre-natal mortality still runs very high, and Stockard thinks induces an excessive elimination of the weaker individuals among the grandchildren and great-grandchildren of alcoholic animals; in later generations, however, there is a definitely lessened mortality. The fourth generation animals descended from alcoholic great-grandparents have a mortality of only 13.5 per cent. against a mortality among the control of 21 per cent., thus completely reversing the condition met with among the early alcoholic generations. The alcohol while it appears to have eliminated weakness in the stock has not lowered the quality of those surviving, but judging from the results of the experiments it has acted as a selective agent and brought out a group of unusually strong specimens; although the numbers of the offspring are less than those of the normal controls, those with an alcoholic ancestry show a record superior in vitality. Applying these experimental results to the alcohol problem in the human it may be claimed that some such elimination of unfit individuals has taken place in Europe since all of its dominant races have a definitely alcoholic history especially in the more recent past when the use of alcohol greatly exceeded the use of it to-day. If the welfare of the race or stock is to be considered rather than that of the individual it would appear that the descendants of those groups of animals which suffered in the past the highest mortality and withstood the most rigorous elimination, are superior in vigour to the descendants of those groups who were less severely tried. The close approach to perfection of wild stock has been aided by the elimination of weak and defective specimens. Civilization has tended and

is tending to remove many of the agencies of severe selection. The burden on the community of providing for individuals who are actually harmful to it from a biological standpoint may become more and more intolerable in the future.

### SHOULD WE HAVE FACULTIES OF PUBLIC HEALTH?

IN an article which appeared in "Science" (Feb. 15, 1924) Professor H. W. Hill asks the question "Is public health a subject of enough individuality and importance to warrant the establishment of a faculty devoted to it in a university?" The reasons for separating out any subject or group of subjects would appear to be as follows; first academic, based on the obvious relationships of the special group of subjects to the various university curricula; second, administrative, based on university staff and student affiliations; and third, practical, based on the requirements of the outside world and the preparation of students for a special service. A faculty of law exists because many of its subjects are apart from those of other courses, and because it prepares its students for a special service in the world. A faculty of science exists for similar yet in some cases converse reasons. Its several departments enter into the teaching of other courses but cannot as a whole be assigned to any one of them, and it prepares students for many special sorts of service of a character dissimilar from that provided by other faculties. The outstanding reasons for the formation of a faculty are to simplify the system and intensify the teaching of an allied group of subjects in a university and thus to fit its students to

assume special duties in the outside world. The recognition of public health as a group study independent of medicine has been granted in several universities. The University of Pennsylvania many years ago established an Institute of Public Health. Johns Hopkins and Harvard have independent schools of health fostered by gifts from the Rockefeller Institute, an institution which with large vision has promoted in these schools the study of all branches of science which have to do with the conservation of public health. This year London also, under Rockefeller stimulation, is about to open an independent school of public health. The courses offered vary in length from one year for post graduates in medicine to four years for non-medical students. The University of Western Ontario has taken one step further and has constituted public health a faculty. There are many specific subjects peculiar to public health which are not met with in medical curricula because not of practical interest to medical men. A Faculty of Public Health will prepare its special students for a special field of service which is continually growing in importance and in demand. Such a group of studies is not only eligible but is definitely entitled to a position as an independent faculty in every Canadian University.

### REST PAUSES IN INDUSTRY

THE Industrial Fatigue Research Board of the Medical Research Council has issued a report dealing with the effects of introducing short rest pauses of definite duration and at definite

intervals between the spells of work in occupations which involve light repeated manipulations. It is stated (*Brit. Med. Jour.* March 15, 1924) that the Board has in course of preparation a summary of

the scientific investigations already carried out, but pending the completion of this it has published certain of the results obtained, in two reports. In the first Dr. Vernon and Dr. Bedford present the statistics of the effect on the factory output of the introduction of these rest pauses; although other influences could not be entirely excluded it appeared that the system of rest pauses was followed by a slight but real improvement in the amount of the output, and while it may take several months before the full extent of the benefit is noted the results are most decided in work depending chiefly on the human rather than on the mechanical element; and in slow, as compared with rapid, workers. In the second report an account is given of laboratory experiments carried out by Mr. Wyatt and Mr. Ogden, in which different types of industrial work ranging from purely mental to work involving some muscular

effort were reproduced and the influence exerted by the interpolation of rest pauses noted. A slight reduction in the output occurred in monotonous mental activities such as mathematical calculation, but could be avoided by the introduction of a rest pause of 15 minutes in the middle of the work period rather than by two rests of  $7\frac{1}{2}$  minutes each. These two reports confirm one another and show that the introduction of a regular system of rest pauses was almost always followed by a slight improvement in the output. In the opinion of the Board there is justification for stating definitely that in light repetitive work the judicious introduction of rest pauses not only tends to reduce monotony but increases the contentment of the workers, and in the majority of cases brings about an increase in output of 5 to 10 per cent, notwithstanding the diminution in working time.

### STANDARDS OF NUTRITION

THE widespread interest shown during the last few years in the nutrition and physical development of school children, has brought various problems to light. Perhaps the most important of these is the question of standards by which one may rapidly, and yet with a reasonable degree of accuracy, identify those children who should be considered below par.

Until recently the usual practice in nutrition clinics and in the schools was to consider as undernourished all children whose weight fell 7% below the standard of the Wood scale, which assigns a definite weight for a given height and age. Other standards have occasionally been used, such as Dreyer's stem length and chest circumference or Pirquet's pelidesi system but these have not enjoyed the popularity of the simpler method of Wood. Moreover it is unsatisfactory to find that while various standards agree to a certain extent, there is a considerable proportion of

children who would fall into different categories according to the different standards by which they were judged.

It is therefore not surprising that Dublin and Gebhart\* have questioned the accuracy of all such tables for identifying malnutrition. These investigators, after examining a large number of children and grouping them according to their nutrition, came to the conclusion that only by a complete physical examination could the true state of nutrition be evaluated.

The picture of the whole child, the state of his musculature and subcutaneous tissue, the lustre of the eyes, the colour, posture and such like must all be taken into account, otherwise many children needing attention would escape notice.

It is very clear that a slide-rule

\*DUBLIN, LOUIS I. and GEAHART, JOHN C. Do Height and Weight Tables Identify Undernourished Children? Issued by the New York Association for Improving the Condition of the Poor.

method of estimating a child's nutrition cannot be compared to a careful physical examination, yet the simplicity of the "height to weight" system has made it a practical procedure in every school, and until something equally feasible can be suggested the practice should not be denounced, provided, of course, that it is realized, that the figures thus obtained do not tell the whole story. Few communities have either sufficient funds or the necessary number of qualified physicians to make the careful

physical examination required for more accurate records.

The whole problem of malnutrition is of vital importance to the country. Poor nutrition may be regarded as the end-product of the defects and diseases of childhood, combined usually with faulty or inadequate diet and incorrect habits of personal hygiene. It is therefore desirable that standards of what may be regarded as an adequate physical condition in children be established so that deviations can be recognized and deficiencies remedied.

L. M. LINDSAY

---

### AN INTERNATIONAL HEALTH ORGANIZATION AND THE LEAGUE OF NATIONS

WHILE the League of Nations is regarded by the public generally as an association of States that have accepted certain international obligations with the object of preserving peace so far as that may be possible, yet it is well that the profession generally should recognize that a committee has been appointed to undertake so far as may be practicable co-operation in all matters which concern international health. The need of such an international health organization made itself felt in 1920 when the typhus and relapsing fever epidemics originating in Russia spread into Poland, and threatened western countries. During the year 1923 a definite plan of co-operation between the health committee of the League and the Office Internationale d'Hygiène Publique was worked out and agreed to by all parties, and the new Health Committee of the League of Nations was constituted on that basis. The work of this international health organisation does not encroach upon that of national health administrations, nor does it embark on theoretical enterprises which lead to no practical action. Its object is to advise the Council and the Assembly of the League in all international questions regarding public health. In several

branches of its work a generous donation from the Rockefeller Foundation has been of the greatest service. To its assistance is due the creation of a special centre for world epidemiological intelligence, and studies have been initiated to effect the standardization of antitoxic serums, the amount of dangerous drugs required for medicinal purposes, the transference of diseases by international waterways. Interchanges of the personnel of public health offices have also been made possible through the Rockefeller Foundation, by means of which health officials of one country visit other countries studying methods of work. As a result of the detailed studies made during the past two years and also of the participation for the first time of the delegation from the United States, it has been found possible to make plans for the early convening of a committee of experts on the limitation of the production and manufacture of dangerous drugs to the world's ascertained medical and scientific requirements. It is desired also to standardise physiologically biological products, such as pituitary and thyroid extracts, insulin, and such powerful drugs as digitalis. An enquiry has also been instituted concerning the incidence of sleeping sick-

ness and tuberculosis, and into the cause of pronounced differences in mortality in certain forms of cancer in various countries of Europe. Reports

are to be published at regular intervals. We are sure that the profession throughout the world will anticipate great assistance from such a magnificent effort.

## Editorial Comments

### A LISTER MEMORIAL

Acting upon the suggestion of Dr. John Stewart of Halifax, a former student and assistant of Lister, the Association decided two years ago to establish a Triennial Oration in honour of Lister. A committee was appointed to study the question; and as the result of their deliberations it has been decided through the pages of the Journal to ask the members of the Association for contributions towards the establishment of a fund for this object. The sum considered necessary is \$5,000.00. The interest on this would amount to about \$750.00 in three years. An Oration, celebrating the memory of Lord Lister to be delivered triennially before the Canadian Medical Association at their annual meeting will require about that sum for defraying the expenses incurred, whether in the way of bringing across some distinguished visitor from Scotland, or, if a Canadian, his expenses from possibly a distant province, or in the way of the special publication of the oration.

The suggestion has also been made by one of the Lister Committee that a Lister Club or Society be formed and this suggestion has been adopted.

It may be stated that already some \$600.00 has been subscribed. The Journal would urge a careful consideration of this project on the part of its readers. There must be few indeed who, realizing what Lister has meant to medical science in general and to the fame, in the medical world, of our Empire in particular, will not desire to have their names in the list of those who propose to perpetuate in honour his name in this part of the world. It is a real pride of possession. Dr. John Stewart is to deliver the first Listerian Oration at the coming meeting in Ottawa. Cheques may be sent to Dr. F. N. G. Starr, 112 College St., Toronto.

### PSYCHIC FLURRIES

The very interesting narrative related in Dr. McDiarmid's paper in this issue deals with but

one of the many psychic flurries that have marked the course of human development throughout the pages of history. Whether one recalls the troublesome times of the middle ages when psychic outbursts assumed the proportions of an epidemic, when people lost their contact with reality and gave unbridled expression to their emotions; or confines one's self to the consideration of such an incident as is recorded above, one sees the same mental process at work.

The power of suggestion in the development of hysteria in the individual is probably less potent than in the development of community hysteria. The former remains, as a rule, localized to the individual while, under the infatuation incited by flaming oratory, aided by the temporary collapse of self-restraint and self-criticism, the latter may assume disastrous proportions whether in the precincts of our legislative halls or indulged in by a community under the guise of religion.

It is worthy of note that these psychic outbursts flourish during periods of social unrest and excitement, such as follow world wars or great plagues. In normal times when all is stability and prosperity; when the forces of reality are sufficiently absorbing to hold in check the dormant forces of emotion, all goes well and the artful spell-binder of the type described sows his seed in unresponsive soil. Then comes some great world upheaval, such as the last war, which loosens the strings of self control and opens the door to emotional and moral unrest and the forces, so long held in check, are given expression in all sorts of fantastic and degrading episodes, not the least of which are the demoralizing scenes, staged under the cloak of religion.

It would appear that the legitimate profession of Brandon has acted wisely in permitting their little flurry to pass quietly into history and take its place beside those greater outbursts which have marred the history of the world's sanity from time immemorial.

F. H. M.

## SOUND TEETH

In an article in the "*Nation's Health*" (Sept. 15, 1923) Dr. Harold Cross, Director of the Forsyth Dental Infirmary for Children, takes occasion to point out a fallacy in the statement that clean teeth are always sound teeth. He states that according to his investigations 96 per cent. of the children arriving in America from the southern part of Europe have sound teeth, while 96 per cent. of American children possess defective teeth, and this notwithstanding the fact that the majority of foreign children have no experience with the toothbrush until they enter American schools. Good teeth are determined by the constitutional organisation of the child, and to a great extent are not originally dependent on the toothbrush. The perfect development of teeth is dependent mainly upon prenatal influences. An adequate diet for the pregnant woman should contain leafy vegetables, and milk, as well as other sources of calcium, phosphorus and other mineral constituents. The field of preventive dentistry should not be limited to the type of service offered to school children alone, but prominence should be given to the necessity of a suitable diet during pregnancy in all prenatal clinics. The important period of life during which to lay the foundations for strong sound permanent teeth is during this prenatal period. Dental inspection in the early kindergarten is of more service than in older children. Maternity clinics and the instructive home clinics carried on in prenatal work, should serve as the legitimate opportunity to interpret rational hygiene to potential mothers.

## THE VENEREAL DISEASES GRANT

It is not yet known whether the Dominion Government grant to the Provinces for the treatment and control of venereal diseases is to stand intact during the coming year. Rumour has it that \$50,000 is to be cut from the grant, and that possibly the following year the grant will be discontinued. The reasons given for attacking this grant are the necessity for economy, and the statement that the grant itself is unconstitutional, as under the British North America Act the provinces are supposed to look after health matters themselves.

In opposition to this we desire to emphasize the fact that in 1919 a definite decision was arrived at for the establishment of a Dominion

Department of Health and a Dominion wide health programme. Anything that would undermine the influence and importance of this Federal Department is greatly to be regretted. The profession earnestly hope that the present Government will not lessen the amount devoted to this department and by so doing abandon work that has thus far been carried on successfully and economically and has proved to be of great value and importance to the whole of the Dominion. Over 28,000 cases of venereal disease were reported in Canada in 1923, and it is probable that this by no means represents the number of cases that have occurred, as all medical men do not report every case. At the same time the proper treatment of these 28,000 cases alone will make an appreciable increase in the working efficiency of the population. The Dominion of Canada is straining every effort to bring in immigrants. All proper means of stimulating immigration are at present employed at a great expense. Is not the elimination of venereal disease equally important?

The profession in Canada are using every effort to check the disease, to conserve health and prolong life, and are strongly of the opinion that the present activities of the Dominion Department of Health are effecting great good, and achieving results worthy of any government. It is our hope that public opinion may be so aroused and through the press the Government may be influenced to extend rather than curtail efforts which mean so much to the welfare of every province in the Dominion.

## DISCUSSION ON VERTIGO

At a combined meeting of the sections of Medicine, Neurology, Otology, and Ophthalmology of the Royal Society Sir Humphrey Rolleston opened a discussion on "Vertigo," which he described as a subjective sensation of a disturbed relationship of one's body to surrounding objects in space. Afferent impressions in the order of their importance were vestibular, ocular, and kinesthetic. The presence of an aural lesion did not necessarily prove that the vertigo was due to an ear condition. Gowers referred to cases of pseudo-aural vertigo in which with but slight evidence of disease in the labyrinth functional disturbances of the cortex had been set up and had remained purely central. The new vestibular tests enable us to diagnose diseases of the vestibular apparatus so that the points to be

discussed by the physician became narrowed to two main questions. What evidence was there that vertigo might be caused by the actions of toxins, transient vascular changes, or functional disturbances of that part of the cerebral cortex where the sensations concerned in equilibration normally met in harmony; and secondly in what way could general diseases and visceral disorders affect the vestibular apparatus? From the consideration of epileptic aurae and borderland cases of epilepsy it appeared probable that toxic, vascular or functional disturbance arising at the cortical end of the vestibular system might occur. Such a possibility was suggested by the analogy of migraine and by the occasional alternation of migraine and vertigo.

The gastric origin of vertigo has been much discussed, but the more modern view is to regard the gastric manifestations and the vertigo as concomitant effects of the vestibular disturbance,

instead of being related as cause and effect. High blood pressure is associated with increased pressure of the cerebro-spinal fluid and of the fluid in the semicircular canal; arteriosclerotic vessels appear to be more prone than healthy vessels to spasm, and vertigo has been explained as a spasm of the vestibular branch of the internal carotid artery or of the cerebellar, pontine, or cerebral arteries. Both anaemia and erythraemia could cause vertigo, although the exact point of the vestibular apparatus which suffers is doubtful. When a patient complains of giddiness or dizziness it is difficult to know exactly what his sensations really are, and this difficulty is enhanced by the fact that in any attack of severe vertigo there is nearly always transient mental confusion. The question has been raised whether vertigo is ever truly a hysterical symptom. His own opinion was that true vertigo never was due to hysteria.

---

**Adiposis Dolorosa, 300 B. C.**—LeRoy Crummer, Omaha, publishes pictures of a terra cotta grotesque of a case of adiposis dolorosa that he believes dates back to 300 B. C. He is convinced that it is a votive offering. These votive offerings afford evidence concerning the peculiar mixture of belief and superstition, and of dependence, which is always the determining factor in the relationship between physician and patient. This figure is of a period when the classical style in modeling had yielded to a more naturalistic form. The donorium illustrated here was found at Athens in the excavations of 1914, and has been ascribed to the third century before Christ. It is a pure terra cotta, is polychrome, and stands 12 cm. high. It is a perfectly typical reproduction of a case of adiposis dolorosa. Crummer assumes that this effigy was made and sent in the form of a petition to the gods of health rather than as an expression of thankfulness for relief of the symptoms. A similar clinical case is cited to bring to mind the motivation for the modeling of this old grotesque.—*Jour. Am. Med. Assoc.*, May 3, 1924.

---

**Hepatic Anaphylotoxin.**—W. H. Manwaring, Vaughn M. Hosepian, Dorothy F. Porter and

James R. Enright, Stanford University, Calif found that in typical anaphylactic shock in intact dogs, the arterial blood pressure falls precipitously to about 35 mm. of mercury by the end of forty five seconds, gradually decreasing to about 25-mm. by the end of ninety seconds. Recovery usually begins about the twelfth minute. The arterial blood pressure is usually restored to normal in from sixty to ninety minutes. During the first forty-five to seventy-five seconds of this reaction, the urinary bladder shows no recordable change in intracystic pressure. The intracystic pressure then gradually increases, usually reaching a maximum of from 25 to 50 mm. of mercury by the end of two and a half minutes. Recovery immediately sets in. The intracystic pressure is usually restored to normal by the end of the fifth to the seventh minute. Bladder reactions apparently identical with those of anaphylactic shock are produced by the intravenous injection of histamin. The authors believe that this typical anaphylactic bladder contraction is due to chemical products, explosively formed or liberated by the anaphylactic liver, products having a histamin-like action on the urinary bladder. Suggestive evidence in support of this view is furnished by perfusion experiments.—*Jour. Am. Med. Assoc.*, May 10, 1924.

## Abstracts from Current Literature

### MEDICINE

**On the Action of Alkali Salts with Regard to the Setting free of Tetanic Symptoms in Healthy Grown up Individuals.** Nothmann, M., and Wagner, A.

**Concerning the Action of the Anions, particularly the Phosphate-ion on the Electric Excitability.** Nothmann, M., and Guttmann, E. *Archv. f. Exper. Path. u. Pharm.*, 1924.

These articles come from the Medical Clinic of the University of Breslau. The authors point out that an increase in the quotient  $\frac{N_a}{C_a}$  is accompanied by an increased excitability of the cells and conversely a decrease in this quotient is followed by decreased excitability (Jacques Loeb); hence, one can change this ratio and increase or decrease the excitability. Only ionized calcium can act on living cells. Increased nervous excitability is caused by a decrease in the Ca ions and it is this that leads towards a condition of tetany. It is well to remember that the amount of ionized calcium is not altogether dependent on the total calcium of the organism.

Hitherto, known forms of experimental tetany agree with calcium decrease and phosphate increase in the blood, such as, in parathyreoprivia and in guanidine tetany. It is known that such tetany can be reduced quickly by intravenous injections of calcium. Again in normal animals, ten to twenty per centum  $CaCl_2$  solutions will reduce the normal excitability. Greenwald has shown that in parathyroidectomized dogs there is a marked diminution in the excretion of phosphorus in the urine which was not accompanied by an increase in the elimination of this element in the faeces. He found that phosphorus was retained in the blood and thought that this was primary.

The authors observed particularly the changes in electrical excitability as well as the appearances of Chvostek's and Troussseau's signs. They used solutions of inorganic and organic potassium and sodium salts in acid, alkaline and neutral forms, and administered them by mouth and intravenously. It was found that all of the potassium salts caused increased excitability and there were the accompanying Mann-Erbsche phenomenon and the Chvostek's and Troussseau's signs.

The strongest effect was with the di-potassium phosphate with which there was in addition the facial phenomenon of Schulze. This K-ion effect was influenced by the nature of the anion being greatest with that of the phosphate. The excitability is increased when the solutions are alkaline and diminished when acid.

The sodium salts act very feebly and only by virtue of the anions most marked in the case of di-sodium phosphate. In one experiment they used ammonium phosphate and found a lowered excitability, which supports Porges and Adlersberg in recommending the use of this salt in tetany.

Of the effect of the kations, that of potassium is considered as specific, and of the influence of the anions, the phosphate is greatest in the increasing of excitability.

WESLEY BOURNE

**Arteriosclerosis vs Hypertension.** O'Hare, James and Walker, William G. *Archives of Internal Medicine*, March 5, 1924.

The authors were led to investigate the relationship of arteriosclerosis and hypertension by the accidental finding of normal retinal vessels in two patients with typical advanced arteriosclerosis of the radial and brachial arteries. Analysing these two cases, it was found that both patients had normal blood pressures. The authors then collected fifty such cases of non-hypertensive arteriosclerosis. The majority of the patients were old. Their observations on the peripheral vessels were confined to the radials, brachials and temporals. In examination of the retinal vessels they confined themselves largely to the two signs of arteriosclerosis which they regarded as absolute and beyond criticism. These signs were compression effects at arterio-venous crossings and irregularity of the lumen. The latter including beading and obliteration of the red columns through increasing opacity of the wall.

In the first fifty non-hypertensive cases, the peripheral sclerosis varied from slight tortuosity or thickening, to beading and calcification. More than half the cases showed marked sclerosis. In contrast, the retinal vessels showed almost no sclerosis. From an arrangement of the blood pressures according to an ascending value for the systolic, no relationship could be established between the height of either the systolic or diastolic

pressure, and the degree of peripheral sclerosis. The average age in the fifty non-hypertensive cases was 55.6 years.

A second series of fifty cases were investigated, in which there was peripheral sclerosis and a systolic pressure of over 145. The degree of peripheral sclerosis in this group averaged somewhat less than in the first fifty cases, the bulk of them being designated "moderate" or less. Sixty-eight per cent. of this second group showed a grade of retinal sclerosis classified as "marked." There was, however, a definite lack of relationship between the degree of sclerosis in the peripheral vessels and that observed in the retinal vessels, in the same case. There does, however, seem to be a qualitative relationship between the degree of retinal sclerosis and the blood pressure.

During their investigations they came across four cases, which at first sight, appeared to fall into the non-hypertensive group, although they did show definite retinal sclerosis. On going into their past histories it was discovered that all of them had previously been hypertensive. These findings suggested strongly that although hypertension occasionally occurs without evidence of sclerosis in the retinal muscles, the finding of the latter indicates the probability of a previous hypertension.

They summarize their findings as follows:—

(1) The cases emphasize the great importance of examining carefully the retinal vessels, instead of merely glancing at the fundi for the far less important haemorrhages and white spots.

(2) It has been definitely shown by F. Moore (Quart. Jour. Med., 10.29, 1916-1917) that the condition of the retinal arteries is a close guide to the condition of the cerebral vessels. Hence, the value of the retinal vessels in prognosis.

(3) The finding of retinal arteriosclerosis in patients with a normal or low blood pressure, probably indicates the existence of a previous hypertension with a subsequent myocardial weakening.

(4) Peripheral vessels play little or no part in hypertension.

(5) There is, however, a definite relationship between small vessel sclerosis, indicated in the retinal arteries, and high blood pressure.

(6) Nothing was developed from the observations to prove whether hypertension comes first and sclerosis second, or vice versa. Many cases of essential hypertension which are said to be free from association with arteriosclerosis, in reality

may have a considerable degree of sclerosis of the small blood vessels.

(7) That the condition of the retinal vessels is a fair index of small vessels throughout the body.

L. C. MONTGOMERY

#### Streptococci in Epidemic Encephalitis.

Rosenow, E. C. *Journ. of Infect. Dis.*, April, 1924.

Rosenow describes a special strain of green-producing streptococci as the probable causative agent of epidemic encephalitis. Consistent results were obtained in a series of undoubted cases of encephalitis, eighty-two in number, representing a wide range of types of the disease, and extending over a period of four years. The peculiar streptococci were isolated constantly from infected tonsils, teeth or nasopharynx during life, and from the brain after death. With this streptococcus in freshly isolated cultures, after as high as forty-four rapidly made subcultures, and after a series of animal passage, characteristic symptoms and lesions of different forms of encephalitis have been reproduced in animals.

The organism has been demonstrated in the lesions which develop spontaneously in man, and which have been produced experimentally in animals, and proved absent in adjacent normal tissues and in the brains of persons and animals that died from other causes. It has been shown to possess specific antigenic properties. Most of the strains are immunologically alike as determined by agglutination experiments with hyperimmune serums. The serums of patients with acute forms of the disease agglutinated specifically the homologous and many heterogenous strains. The requirements for proof of causal relationship between this streptococcus and encephalitis seem to have been fulfilled.

The organism varied greatly in size and shape, depending apparently on conditions of growth. Large and extremely small forms, sometimes in the same chain, and large oval forms breaking into small forms have repeatedly been seen in cultures and have been demonstrated repeatedly in the lesions of undoubted cases of encephalitis.

H. B. C.

#### Preparation of Dry Antitoxin and Agglutinin Powders.

Hirsch, Edwin F. *Journ. of Infect. Dis.*, April, 1924.

A method is described for preparing a dry powder of diphtheria antitoxin. The substance so prepared is a light, white, starchy powder, soluble

to a certain extent in water, forming an opalescent liquid. The addition of a few drops of decinormal NaOH increases markedly its solution. In solution it is actively potent. It may be that dry powders with antitoxin properties can be preserved for considerable time without deterioration, and if this proves true, such preparations may have value commercially. A similar method is described for preparing dry powders from rabbit and human plasma with active agglutinating properties.

H. B. C.

#### Inoculation with Secretions from Coryza.

Robertson, R. C., and Groves, R. L. *Journ. of Infect. Dis.*, April, 1924.

In a series of experiments, nasal secretions were secured from eleven persons suffering with acute uncomplicated coryza. After being diluted and passed through a Berkefeld filter, these secretions were sprayed on the nasal mucosa of 100 volunteers. These experiments presented no convincing evidence of a filter passing organism as the exciting factor in acute coryza.

During the onset and early stages of an attack of coryza there was a marked diminution of the total bacterial flora of the nasal secretions, with an equally marked predominance of one of the normal habitants—usually staphylococcus albus. During the purulent stage of the attack, a marked increase of all organisms over the normal flora of health was observed, although the predominance of one organism still remained. When the secretions began to diminish, the bacterial flora diminished and gradually returned to that of health.

H. B. C.

#### The Haemotoxins of Intestinal Parasites.

Leidy II, Jos. *Jour. of Parasitology*, March, 1924.

It is quite clearly recognized that animal parasites in the intestinal canal or organs, give rise to mechanical and reflex disturbances. But the author thinks that other factors must also be taken into account, notably the secretions of parasitic worms. The broad tapeworm, e.g., is known to contain a haemolytic agent, and this parasite is well known as being able to cause severe anaemia. The hookworm and whipworm also secrete a haemolysin. Round worms have been shown to contain a peculiarly irritating matter, and marked itching of the fingers and eyes, with sneezing have followed the handling of *Ascaris lumbricoides*.

He thinks that parasitic anaemia is due more to these secreted haemolysins than to the direct

abstraction of blood from the host by sucking. But while severe anaemias have undoubtedly been caused by the tapeworm, numerous cases are known in which the presence of these worms has not caused anaemia, and the explanation of this apparently is that the toxins of the worms give rise to antibodies.

Three cases are described in which round worms caused serious malnutrition and anaemia, and in one case, angioneurotic oedema, but with the removal of the worms there was rapid and complete recovery. Emphasis is laid on the fact that the worms showed varying degrees of disintegration and digestion. This was thought to be significant, but our knowledge of what substances are liberated during such degenerative changes, is very incomplete.

A high eosinophile count is presumptive evidence of parasitic infection, according to helminthologists. An observation of this nature, together with evidence being collected by numerous workers, should, it is thought, place the "parasitic syndrome" on a workable scientific basis. The author thinks that all cases of anaemia and malnutrition, especially in younger people, should be suspected of having parasitic infection, and the microscopic examination of faeces should become as much of a routine practice as urinalysis.

H. E. M.

#### The Hippocratic Fingers.

Campbell, D. *Brit. Med. Jour.*, Jan. 26, 1924.

In this paper a case presenting clubbed fingers is dealt with, the microscopical findings in one such finger removed during life are given, and the mechanism of clubbing is discussed. The patient was a woman of thirty-six, who eventually died of a large endothelioma of the lung; the fingers had become enlarged some months after the initial symptoms had appeared, and the patient also insisted that there was a period when the swelling of the fingers had definitely receded for a few weeks and had then returned again.

The essential difference between the microscopical picture of the clubbed and normal fingers, was the oedematous condition of the tissues at the finger tip in the former, especially that part of it lying between the nail bed and the bone. A general argument can hardly be based on one case, but the writer's own view is that the pathological basis of this condition is oedema. It is true that clubbing is usually slow in development and permanent in result, but many cases have been reported in which it appeared quickly and disap-

peared with removal of the prime cause. It has been noted in pneumonia and empyema. Passive congestion always plays an important part in the development of oedema, and from this point of view oedema is again suggested as the main factor in the clubbing seen in conditions where there is definite obstruction to the venous return of the arms, as in aneurisms of the brachial artery with pressure on the vein. In one case the clubbing was unilateral, and ligature of the affected artery almost completely removed it.

But to explain the clubbing seen most frequently in association with pulmonary and pleural lesions, is not so simple. The factor common to all, however, is the diminished amount of lung substance available for oxygenation, which leads to a lowered oxygen tension of the whole arterial blood, and so to a chronic impairment of oxidation in the tissues of the extremities. Here again is to be recalled the association of oedema with imperfect oxidation. It is difficult also to say why clubbing does not appear in all cases of bronchiectasis, for example. Again, there are no obvious signs of oedema, such as pitting. And, finally, other observers have failed to observe the same histological appearances as were found in this case.

It would be difficult to explain clubbing on the ground of some toxin, as the condition has been noted in so large a range of diseases, such as chronic jaundice, carcinoma of the oesophagus, congenital syphilis, rickets, malaria, etc., etc.

H. E. M.

## SURGERY

**Use of x-ray Therapy in Disturbed Menstruation.** Rongy, A. J. *New York Jr. Obst. and Gyn.*, Feb., 1924.

The author is opposed to surgical interference for fibroid growths of the uterus in cases where there is cardio-renal disease, or where the location of the tumour increases the operative risk. About thirty-five per cent. of cases with fibroid growths of the uterus are poor surgical risks.

In this series of cases x-ray was used, and in only a very small percentage was operative interference necessary for recurrent uterine haemorrhage. He further demonstrates that small doses of x-ray may be used with great advantage in cases of menorrhagia, metrorrhagia, or to correct menstrual irregularities where the function of the ovary is disordered. In the hands of a skilled radiologist mild doses of x-ray acts as an ovarian stimulant, and he cites a series of various

types of irregular menstruation which have been corrected by mild stimulating doses of x-ray.

A. D. CAMPBELL

**Foreign Body in Larynx with Absence of Cough Reflex.** Ross, G. T. *The Laryngoscope*, Jan., 1924.

That a foreign body may exist in the larynx or upper respiratory tract and not be indicated by any pain or symptoms of obstructed breathing, or cough reflex, is well brought out in this article. A child of fifteen months was brought to Dr. Ross with a history of having swallowed a safety pin. The patient showed no signs of discomfort of any kind. This fact might easily mislead a practitioner. An x-ray plate, however, demonstrated the presence of an open safety pin lodged in the larynx. Under general anaesthesia the pin was removed, with little traumatism, by means of forceps curved on the flat.

G. E. HODGE

**Roentgenologic Examination of the Gall-bladder.** Graham, E. A., and Cole, W. H. *J.A.M.A.*, Feb. 23, 1924.

This is a preliminary report on a method for x-ray examination of the gallbladder. In principle, the idea is the same as that underlying the x-ray examination of the gastro-intestinal tract; i.e., use is made of some substance which is opaque to the rays and which is excreted in the bile, thereby giving an outline of the gallbladder. Investigations into liver function have already shown that certain dyes are excreted into the bile, and the authors have tried to find out which one of these dyes would suit their purpose. Experiments proved that some gave good shadows, but were too toxic, and eventually the choice was narrowed down to the calcium salt of tetrabromophenolphthalein.

A dose of 0.1 gm. per kilogram of body weight was found to be enough to cast a shadow; six grams is the largest dose yet used in this connection. The dye is ground up in water with calcium hydrate, in the necessary quantity, and is then dissolved in about 350 c.c. of distilled water. They found that a small amount of calcium lactate—2 gm. in solution—increased the solubility and stability of the solution. After sterilization by heat the solution is filtered. It is given intravenously, about thirty minutes being allowed for the administration. Three hours after injection the first x-ray is taken and is repeated at intervals of several hours. Good shadows

were obtained in all the patients examined, but in these cases the gallbladder presumably was healthy. The authors say that it is more difficult to get the shadow of a pathologic gallbladder, but this fact is held to be of some value as negative evidence. No untoward symptoms have resulted, except for transient nausea in one case. In experimental work on animals large doses were found to be toxic. H. E. M.

#### PAEDIATRICS

**Enlarged Thymus.** Pfahler, G.E., M.D., Philadelphia. *Arch. Ped.*, Jan., 1924.

Thymic enlargement may be present without causing symptoms and conversely the x-ray may fail to show enlargement when undoubted symptoms exist. This is due to the fact that only lateral enlargement is shown by the x-ray, while symptoms are caused by antero-posterior pressure. The classical symptoms are dyspnoea, cyanosis and inspiratory stridor but many cases do not show these. The chief complaint is often cough or attacks of choking. Certain general symptoms are believed to exist which are due to faulty endocrine function. These consist of flabbiness, lack of resistance to infection, tendency to convulsions, eczema and mental retardation.

Status lymphaticus is probably dependent on an enlarged thymus, while the symptoms referred to above are probably due to pressure which can actually be demonstrated by bronchoscopy. This pressure may be directed against the trachea, the superior vena cava, recurrent laryngeal nerve, the vagus nerve or the heart itself. X-ray shadows of the thymus vary considerably and are often difficult to distinguish from those of enlarged lymph nodes in the upper mediastinum. Both these conditions yield to x-ray treatment. The absence of an enlarged thymus at autopsy does not prove that the thymus was not enlarged during life. Failure to demonstrate a moderate amount of enlargement is usually due to the use of a too strongly penetrating ray or to too long exposure which permits of movement.

X-ray treatment of enlarged thymus gives uniformly brilliant results, improvement being seen almost immediately. Several exposures are necessary. Radium gives equally good results and has certain advantages over the x-ray. It is easily and quietly applied; it is more rapid in its action and one application is usually sufficient. It is therefore the method of choice.

L. M. LINDSAY

**Meningeal Haemorrhages in the New-Born and their Consequences.** Gordon, Alfred. *Am. Jour. of Dis. of Children.* April, 1924.

The early part of this article concerns itself with a discussion of the anatomy of the meninges, showing the blood channels that are carried within the septum, the falx cerebri and the tentorium cerebelli. During a difficult labour, the frequent changes in the shape of the head and the excessive tension over-stretch the septum, and tears follow. These tears may be complete or incomplete, unilateral or bilateral. When the tentorium is involved, the tear is usually found below its junction with the falx cerebelli. When the falx cerebri is damaged, the tear occurs at the level of its middle two-thirds. Subdural haemorrhages may occur over the surface of the cerebral hemisphere, particularly in foot presentation. Occasionally there may be haemorrhage at the base of the brain; ventricular haemorrhages are rare. The site of the haemorrhages is of importance. Haemorrhage below the tentorium though small is of graver consequence than a larger one above. Tears of the tentorium are most frequent and were found in seventy to seventy-five per cent. of dead foetuses delivered by breech presentation.

The immediate clinical manifestations are, collapse, cyanosis, low temperature, convulsions, circulatory and respiratory disorders, palsies and contractures. These stormy symptoms may subside and the child enters into a chronic state of physical and mental inferiority with a crippled central nervous system. The clinical varieties of the end results of meningeal haemorrhages are described as (1) cerebral diplegia, with spasticity but no mental inferiority, due to prematurity and congenital insufficiency of the pyramidal tract, or of another type associated with spasticity, paralysis, and disturbance of intelligence and convulsive phenomena. The association of intellectual phenomena with paralysis and spasticity of the limbs indicates a lesion in the frontal and Rolandic areas and in the presence of epileptiform manifestations is unfavourable for mental development. (2) If the haemorrhage is limited to one sphere, hemiplegia results, usually associated with mental deficiency. With the hemiplegia there is under-development of the affected limbs accompanied by contractures and deformities. (3) Although choreic and athetotic movements may be present with the above forms they may be present alone with more or less mental deficiency. (4)

Cases showing unilateral or bilateral cerebellar involvement, so called cerebellar hemiplegia or diplegia.

The author concludes that the cause of meningeal haemorrhages is the tearing of the membranes due to over-stretching caused by great cranial stress, and the preventative aspect of the treatment is obstetrical.

Supratentorial haemorrhages can be differentiated from subtentorial by clinical signs. In the former there is the bulging fontanelle, sleeplessness, restlessness, convulsions; in the latter apathy, somnolence, cyanosis, nuchal rigidity, vasomotor and respiratory manifestations. In the latter, lumbar puncture may be of value to relieve pressure and is apparently curative in some cases. In the former craniotomy is indicated. Some authors recommend the operation of lumbar puncture as a routine; if the haemorrhage is subtentorial, the blood may be removed and is of therapeutic value, whereas if the haemorrhage is supratentorial no blood appears in the spinal fluid and the diagnosis may be established from that fact.

R. R. S.

#### Acute Fatty Enlargement of the Liver in Infants.

Report of four cases with Necropsy Examinations. Kohn, Jerome L. *Am. Jour. of Dis. of Children*, April, 1924.

Two of these infants suffered from metallic poisoning, one from phosphorus, the other from arsenic. The other two reported, appeared to be the victims of an intense toxæmia of unknown origin. The liver was palpable as a large tumour extending down into the right pelvis, accompanied in one case by a moderate enlargement of the spleen. The interesting points were the necropsy findings, particularly in the liver, which showed macroscopically great increase in size, with pale yellow and pink motting. On cut section the surface was distinctly greasy and showed the same pale yellowish areas surrounded by pink. Microscopically there was an intense parenchymatous degeneration and fatty infiltration of the liver cells, but no areas of necrosis or cellular infiltration. The condition was identical in three cases, the fourth showed some necrosis and a small amount of cellular infiltration.

Phosphorus, arsenic and chloroform are the most frequent causes of rapid fatty enlargement of the liver. Less marked enlargement may be caused by some acute infections, acute intestinal intoxications and some systemic disease (tuberculosis, syphilis). MacCallum believes that the

deposit of fats is an infiltration rather than a degeneration. A marked increase in the amount of fat circulating in the blood is one of the associated findings, which occurs only when the glycogen content of the liver is very low and when the body is undergoing carbohydrate starvation, as in acute intestinal toxæmia, so that the liver cells must burn a great amount of fat to supply their energy needs. The fat reserve of the body is mobilized more rapidly than the cells can utilize it, or there may be a diminished oxidation of fat within the liver cells, leading to an intracellular deposition of fat, because the rate of utilization is slower than the rate of supply, as in passive congestion.

It has been shown experimentally with animals poisoned with phosphorus, that the use of glucose intravenously and by mouth, will prolong life. It would seem reasonable to give glucose in the treatment of these cases with the hope of assisting the liver in the oxidation of the fat.

R. R. S.

#### DERMATOLOGY

##### The Clinical Aspects of Cutaneous Reactions after Arshenamin. Klander. *J.A.M.A.*, March 22, 1924.

Arsenic has long been recognized as a rare cause of eruption of the skin. With the millions of intravenous injections of diarsenol and allied arsenical compounds it is not surprising that this type of dermatitis medicamentosa is increasing. This is an illustrated analysis of these untoward cutaneous reactions, which consist of erythematous, squamous, macular eruptions of varying severity, from sparse macules to universal erythema, or, if severe, dermatitis exfoliativa. The macules may be guttate or nummular, morbilliform or scarlatiniform. In the mild cases the eruption disappears in a few days. The majority of cases develop into a fairly universal erythema with branny scaling. Pruritus develops early and is in direct proportion to the severity. The acute cases are accompanied by severe headache, gastrointestinal symptoms and fever. A scarlatiniform eruption develops suddenly and progresses to dermatitis exfoliativa. Severe cases may be accompanied by conjunctivitis and facial oedema, with a follicular papular eruption of the trunk, or vesicles and bullae situated usually on the hands and feet. Additional cutaneous manifestations of arsenical poisoning are pustular and ulcerative lesions, pigmentation, hyperkeratosis, herpes zoster, hyperhidrosis and erythema of

palms and soles with itching pain, tenderness and paraesthesia.

Many diseases are simulated, more or less, by post-arsphenamin dermatitis, i.e., lichen planus, scarlet fever, measles, pityriasis rosea, seborrhoeic dermatitis and papular eczema.

In a large group the incidence of the reaction was one in 800 injections. Twenty per cent. of these were severe. Post-arsphenamin exfoliative dermatitis is less chronic than the disease arising from other causes. It involves in a relatively short time or death follows.

Any eruption appearing in the course of intravenous arsenical therapy, particularly if itchy, red and scaly, should be regarded with suspicion and the treatment postponed. Paraesthesia of the feet is another danger signal (arsenical neuritis). It develops in many patients after eight or ten weekly full doses.

Other evidences of arsenical poisoning should not be neglected, i.e., gastro-intestinal symptoms, anorexia, malaise, lassitude and loss of weight. If treatment is continued the patient becomes more intolerant to the drug and arsenical administration becomes impossible except in very small dosage.

Another group of reactions appears during or immediately after the injection in less than one per cent. of cases and is attributed to vaso-motor reaction. These are characterized by some or all of the following:—constriction of the chest, fullness in the head, coughing, conjunctival congestion, pupillary dilatation and rapid pulse. If severe, there is marked respiratory distress, twitching of the limbs and unconsciousness. The reaction is usually transitory though fatal cases have been reported. Urticaria may appear either immediately or after a few hours and is usually fleeting. Prolonged administration favours this manifestation.

The Herxheimer reaction occurs when an untreated syphilitic patient in the acute stage receives an initial full dose. There is an accentuation of the eruption, fever and constitutional symptoms. It may be avoided by a smaller first dose.

Reference is made to herpes simplex and zoster (Hutchinson). Purpura is rare and is doubtless due to the vasculo-toxicity of arsenic. With the latter there may be bleeding of the gums and nose as shown by one fatal case. Pigmentation was present in one case of prolonged administration where one hundred injections were given.

The article contains ten excellent illustrations from the author's cases.

C. R. B.

**The Danish Treatment of Scabies.** Greenwood, Arthur M. *Journ. Am. Med. Assoc.*, Feb. 9, 1924.

A twenty-four hour method of treating this protean disease is here outlined.

An ointment with potassium sulphide as its important element is applied to the whole body, except the head. Hydrogen sulphide is produced when this is in contact with the skin. After a wait of fifteen minutes for absorption the patient goes to bed. Twenty-four hours later he receives a bath and fresh underclothes and the treatment is finished. Disinfection of the bedding, etc., and treatment of the balance of the household are urged.

Lomholt reported 678 cases from 1915 to 1920, without a single relapse, and only two cases of dermatitis, due to faulty ointment. Greenwood treated eighty-four cases, with success in all but three, and in these directions were not followed. Dermatitis was produced in two of the latter series when the ointment was applied for five days by mistake. It is claimed that the one-day treatment does not cause dermatitis and itching as, sometimes, is seen after the three-day method.

The amount of time and care necessary to make this ointment would make its cost prohibitive for scattered cases unless it could be procured from a clinic where it was in constant use. In these cases the old three-day sulphur ointment method is recommended. The method of preparation is as follows:—

(1) One kilogram of sublimed sulphur is mixed with 2 kg. of fifty per cent. solution of potassium hydroxide (as free from water as possible). Gentle heat is applied until reaction ceases and the solution clears. At the completion of the process sulphur should be in slight excess.

(2) Petrolatum and wool fat 225 gm. of each, are mixed without heat. To this mixture is added 375 gm. of the solution of sulphur and potash mentioned above.

(4) To 40 gm. of 20% NaOH solution is added 28 gm. of zinc sulphate. The mixture is agitated thoroughly until reaction ceases, poured on filter paper, and washed thoroughly; then the washed precipitate is added to the foregoing.

(5) Liquid petrolatum is added to obtain a total weight of 1,000 gm.

(6) Five grams of oil of bitter almond is added to check the disagreeable odour of hydrogen sulphide.

C. R. B.

## Medical Societies

### DISCUSSION ON CHRONIC BRONCHITIS\*

BRITISH MEDICAL ASSOCIATION: ANNUAL  
MEETING, 1923.

The discussion covered recurrent and chronic catarrh of the trachea and bronchi. Its causation was regarded as microbial, but the opening speaker, Dr. J. J. Perkins, wished to take a broader view, by including predisposing conditions such as occupational surroundings, climate, preexisting pathological conditions in the upper respiratory tract, and general constitutional factors. He paid most attention to the part played by preexisting and predisposing conditions; his experience had taught him that these underlay "a surprising proportion of cases," not including of course, the single acute attack of bronchitis. He thought that the common predisposing conditions were chronic disease of the upper respiratory tract, and though this was well enough known in a general way it was not sufficiently acted on in practice. Adenoids in children, for instance, were well understood to frequently underlie bronchitis, but similar conditions in adults were equally important factors. Other predisposing factors were those concerned with metabolism, obesity, overfeeding and alcoholic excess.

Not only were these conditions too seldom taken into account, however, but too often there was only a half-hearted attempt at dealing with them. We were too apt to rest on our oars when once an acute attack had subsided, when we should rather press on to restore the patient to a more permanently healthy state. He dwelt on the importance of open air life and respiratory exercises. The respiratory exercises he thought a most valuable aid, for, added to their beneficial effects in opening up seldom used lung areas and making the most of the lung capacity, they are within the reach of all. These exercises have been arranged by Mr. Cortlandt McMahon of St. Bartholomew's Hospital, in two courses. At first the exercises are carried out in the recumbent position, thus

increasing the movements of the lower ribs and developing the inferior lateral region of the thorax. The later exercises are designed to further make the most of the lung capacity by contraction of the abdominal muscles and the diaphragm. All this corrects the faulty habits of shallow breathing.

Vaccine therapy in chronic bronchitis was considered by Dr. J. Odery Symes. In no application of vaccine therapy had he met with greater success than in chronic bronchitis, and he had never seen a case made worse by this treatment. The organisms most commonly responsible are the pneumococcus, various streptococci and the micrococcus catarrhalis, and as it was unusual to get even comparatively pure cultures in these cases, the vaccine treatment was under peculiar difficulties, and all the more care was required in the collection of sputum for culture. Stock vaccines he himself was opposed to, but he had been assured by several doctors that their experience with them had been most encouraging, both in prophylaxis and cure.

The dosage should always be enough to excite reaction, either local or general, slight fever, malaise and a temporary increase of symptoms. It is best to begin with small doses, say five million of each organism, and raise the dose at intervals of about five days. The treatment should extend over at least three months, even if there was improvement before that time. It may be necessary also to prepare more than one vaccine from a patient during a course. Where asthma complicated the bronchitis, vaccine treatment is of marked value in mitigating the latter, but in such cases care should be taken lest the vaccine included a protein to which the patient is hypersensitive. The dose should then be cut down and immunity gradually established. No absolute immunity is derived from vaccine treatment, but the intervals between exacerbations become longer and the severity of attacks is diminished. Failures in treatment may be due to errors in preparation of the vaccine, dosage or administration, but accompanying constitutional disorders may also be responsible. On the whole,

\**Brit. Med. Jour.*, Dec. 15, 1923, pp. 1137.

he thought that vaccine therapy was our most potent weapon for prevention, cure or amelioration of chronic bronchitis.

Dr. G. Seecombe Hett spoke on the subject in its relation to nose and throat infections. He held that all cases of chronic bronchitis were descending infections from the upper respiratory tract. In children proper airway should be established. Nasal infection sooner or later leads to nasal sepsis, with a steady progress towards bronchitis. Tonsillar infection in adults he thought was less likely to lead to bronchitis than the nasal infections. Oral sepsis is undoubtedly a factor.

In the general discussion it was pointed out that streptococcus vaccines gave disappointing results compared with the bacillus of Friedländer, and this was probably dependent on the fact that the streptococci were intensely Gram-positive. Professor Dreyer's method of "defatting" these organisms might be employed with benefit. Statistics are quoted to show that bronchitis contributes very largely to the mortality of a community. It presents the characteristics of a disease entity, varying independently of pneumonia and phthisis. But unlike the latter, there was no evidence that the bringing together of large numbers of people as in occupations, influenced the prevalence of the disease. Generally, mortality records suggested a chronic traumatic origin for the disease rather than an infective origin. It might be expected that improvement of general living conditions and the abatement of the smoke nuisance would reduce the morbidity. Dental sepsis was referred to as a very common cause of bronchitis. With some of the speakers vaccine treatment did not find much favour. All seemed agreed on the importance of educating people to an open air life, and on the necessity for removing underlying conditions and building up the patient.

H. E. M.

---

#### D.S.C.R. TUBERCULOSIS CONFERENCE

Ottawa, April 8th and 9th, 1924.

In searching for a solution of the problem which faced the government of Canada in the early days of the war as a result of tuberculosis in all its forms, but especially pulmonary tuberculosis in members of the Canadian forces, the

federal authorities very wisely called in conference a number of Canada's outstanding sanatorium physicians, and with their assistance and co-operation, a solution of the problem has been attempted, and Canada may feel justly proud of her success in the results obtained thus far in all that pertains to the treatment of tuberculosis in members of her expeditionary forces.

The problem did not end with demobilization, and indeed the end is not yet in sight. The Department of Soldiers' Civil Re-establishment continues to receive many applications from ex-members of the forces who have developed tuberculosis and who believe their break-down to have been solely due to disease, wounds and exposure, incident to military service. A total of 407 cases of tuberculosis, first diagnosed during the year of 1923, have been accepted by the Department for treatment, as their infection was considered to be due to their military service. To date more than 10,000 ex-soldiers have received treatment for this disability, and of these 8,654 are still living and are, therefore, potential patients, whose care still remains a federal responsibility.

The small group of consultants of the early war years has gradually expanded to include almost all the physicians in Canadian sanatoria and clinics, together with the chest specialists employed by the Department at its offices and examining centres throughout the Dominion. In 1922, all these men were invited by the Department to attend a conference at Ottawa, the results of which were of much assistance.

The many new problems relating to the tuberculous veteran which continue to arise and which are becoming increasingly difficult of solution with each succeeding year since demobilization, led the Honourable Minister of Soldiers' Civil Re-establishment to again secure the assistance of these men by arranging a conference which was held in Ottawa on April 8th and 9th and which was immediately followed by the Annual Meeting of the Canadian Tuberculosis Association and the Ontario Laennec Society.

Two very full and profitable days were spent by the 60 men in attendance in the presentation of papers, lantern slides, x-ray films, charts, and in discussion pertaining to the many aspects of pulmonary disease. Diagnosis, differential diagnosis, and diagnostic standards occupied the attention of the conference for the greater part of the first day, during which special attention was also given to the rôle of other diseases.

bronchitis, asthma, syphilis, disordered action of the heart, and neurasthenia in the subsequent development of tuberculosis. A committee nominated to bring in any recommendation as to diagnostic standards and guiding principles for the determination of attributability reported in favour of continuing as at present, each case to be considered on its merits and the standards suggested at the 1922 Conference to be used for guidance. It is believed, that after the comprehensive review contained in the papers, and the free discussion which followed, there will be general agreement on all important and debatable questions relating to either diagnosis or treatment.

Perhaps the outstanding feature of the conference was the very thorough way in which the value of the x-rays in the diagnosis of tuberculosis and other pulmonary diseases, and in the determination of the prognosis, was considered. Numbers of interesting problem cases were presented with clinical notes and radiograms and lantern-slides; several series of films, and their interpretation by individuals without knowledge of clinical data were compared with actual clinical findings and diagnosis. The technique of radiography was detailed and illustrated with a series of films to show the results obtained with varying speed, voltage, make of films, intensifying screens, position of patient and other details. The whole subject of radiography of the lung was summarized in lantern-slides, charts, and films, showing the progress of the disease through various stages to a fatal termination, or its gradual disappearance under treatment and final complete arrest.

Of equal interest with the x-ray were the contributions dealing with the surgical treatment of lung abscess by means of bismuth injections, and with the treatment of septic conditions of the chest, empyema, bronchiectasis, tuberculous empyema, pyopnemothorax, bronchial fistula, thickened and adherent pleura with displacement of the thoracic viscera. The indications for extra-pleural thoracoplasty, the selection of suitable cases, and the technique of operation and end

results, and the place of this new and radical procedure in the treatment of chronic pulmonary tuberculosis was presented in detail and illustrated by slides and photographs.

While the usual sanatorium treatment of tuberculosis had become well established and familiar to those in attendance and reached a uniform level of excellence in Canada, nevertheless many new developments and special aids to treatment received attention and evoked great interest at the conference. Among these heliotherapy, both natural and artificial, is rapidly proving of inestimable value. The value of physiological rest for the diseased lung or lobe by means of a jacket, plaster cast, posture, weight, or a reduced respiratory rate was presented together with the end results obtained by such devices.

The treatment of complications, tuberculous and non-tuberculous, was another important subject. The need of improved methods and better results in laryngeal tuberculosis was emphasized. That much remains to be accomplished in the prevention and treatment of this dread complication is admitted by all, and results heretofore considered unattainable are now confidently looked for through early recognition and prompt treatment by sunlight, quartz lamp, electrocautery, or surgical removal, combining each method with scrupulous observance of rest for the larynx and intensive sanatorium care.

The final hours of the conference were devoted to consideration of certain troublesome phases of the pensions to be given to the tuberculous, and included a discussion of the working capacity and limitations of those with arrested disease, the persistence of symptoms after clinical arrest, and problems in connection with pulmonary diseases, especially asthma and bronchitis; lastly, the incidence of tuberculosis in ex-service men was compared and contrasted, by means of graphs and charts, with the civilian incidence in the same age and sex group and an estimate of future incidence calculated from the available data.

D. A. CARMICHAEL

## Obituary

**Dr. John A. Macdonald**, one of the oldest and most respected of Montreal's physician, died May 8th, in the Royal Victoria Hospital, following an operation for an acute perforating appendix. Dr. Macdonald was born in Prince Edward Island, near Charlottetown, was educated at the Prince Edward Island schools and at St. Dunstan's College where he graduated in arts with high honours. Before entering McGill University he took a year's course at Laval University in Quebec in order to perfect himself in the French language. He then entered the Faculty of Medicine of McGill University from which he graduated with much honour in 1880 winning the Holmes Gold Medal for general proficiency. After graduation he filled for three years the position of house surgeon at the Montreal General Hospital giving general satisfaction for his courteousness and good judgment. After leaving the hospital he started in general practice and attained almost immediate success, establishing a reputation for able and conscientious work and never-failing courtesy. From his early days he was associated with both the English and the French members of the profession, by all of whom he was admired and respected. In addition to a distinguished professional career he was well known as a prominent member of the Knights of Columbus, and attained some years ago the rank of Past Grand Knight of the Montreal Council. He was a trustee of St. Patrick's Orphanage and the oldest member of its board. He gave unsparingly of his professional skill to all its inmates thorough his lifetime, and accompanied by Mrs. Macdonald frequently spent his occasional leisure hours in the playground of the orphanage. He was for a number of years secretary of the Province of Quebec College of Physicians and Surgeons, and was a past President of the Medico-Chirurgical Society of Montreal. He was a member of St. James and University Clubs and the Royal Montreal Golf Club. Dr. Macdonald was married in 1889 to Helen Raymonde, daughter of the late Dr. Boudreault of St. Polycarpe who survives him. There are no children.

**Dr. Parker Nathan Balcom.** The sudden death of Dr. P. N. Balcom which occurred at Aylesford, N.S., on the 25th of April, has removed from the ranks of our profession one of the "old school" who, for many active years enjoyed the well merited affection and esteem of the large district to which he had rendered very notable service. Although in the seventy-fifth year of his age, he had been apparently hale and hearty; he may be said to have died in harness. Graduating from the University of New York in 1875, he at once took up practice in Aylesford, in the heart of the Annapolis Valley orchard district, and quite naturally interested himself actively in fruit culture. And while his professional work was never neglected, he found time for other interests as well, and was ever ready to take a full share in the duties of citizenship. For many years he occupied a seat in the municipal council of King's county; later, he acted as Medical Health Officer for the municipality for several successive terms; from 1904 until his death he was an active member of the Provincial Medical Board of Nova Scotia. In referring to his death, the Halifax *Morning Chronicle* said of him: "Dr. Balcom was a skilful physician, and one in whom people, far and wide, reposed great confidence. He was big physically, and equally large in heart and sympathy. Genial and courteous, with a ready smile and cheering word, he travelled over every sort of road, in all kinds of weather. Up and down the Valley, and over the north and South

Mountains, he responded to the demands upon him, never stopping to ask if the patient could pay. There was nothing mercenary about him. He regarded his profession as a high calling, to which he gave all his time and energy."

**Dr. Pierre Fortunat Lachance** died in St. Boniface Hospital on March 31st, after a long illness. He was born on October 24th, 1877, at the quaint little French-Canadian village of St. Norbert—a few miles to the south of Winnipeg, on the banks of the Red River—where his father was a blacksmith. The Doctor always retained a faithful and cherished memory of these early surroundings; and as soon as he began the practice of his profession he purchased a large statue in bronze of a blacksmith at work at his anvil. Graduating from St. Boniface College, he spent four years in study at Laval University, Montreal. He was later appointed Physician-in-charge of L'Hotel Dieu in that city. To broaden his studies he spent a year in Paris, and on his return became Superintendent of St. Boniface Hospital. His dexterity as a surgeon soon attracted favourable attention, although the pleasure he took in giving relief from pain was in many cases his only recompense. In 1910 he was elected an alderman of the City of St. Boniface, and in 1914 became Mayor of that city, an office which he held for two years. He was an enthusiastic supporter of national societies, clubs and athletics; in his hours of leisure he was also a great lover of books, and his reading was extensive. He will be greatly missed by all who knew him. He leaves a widow and two young daughters.

**Dr. William Dominic Finn.** Reference was made to the serious illness of Dr. W. D. Finn, of Halifax, in the last issue of the *Journal*. We now have to record his death, which occurred on the 13th of April. After graduating at the College of Physicians and Surgeons, New York, in 1890, Dr. Finn began to practice at Halifax, in association with his uncle, the late Dr. Edward Farrell. His many excellent qualities of head and heart soon won for him the trust and admiration of a large circle. He did not court publicity, but as medical examiner for Halifax and Dartmouth, a position which he held for many years, he was frequently brought into prominence in connection with court cases, when his evidence was always put forward in a manner which evoked general commendation. In the rather famous "Bram" trial, which was conducted by a Massachusetts court, his was perhaps the most important evidence submitted, and throughout the many hours in which he was on the stand he made an impression which led to highly eulogistic references by the court and barristers. For about a year before his death, he was the medical representative of the American Immigration Service at Halifax. All his work was characterized by care and thoroughness; all his professional work by great kindness and never-failing courtesy. In his death, the profession has lost one of its most popular and most esteemed members.

**Dr. C. E. Sugden** died May 12 at his home, 336 Maplewood Avenue, Winnipeg, aged fifty-three. He was born in Stratford, Ontario, but in 1882 the family moved to Winnipeg. He was educated in the Winnipeg schools, attended medical colleges in Minneapolis and Chicago and graduated in 1904. In 1905 he was house surgeon in Minneapolis City Hospital and practiced in Alexandria, Minn. in 1906 and 1907. He returned to Winnipeg in 1908, and was associated in practice with

the late Dr. C. W. Clarke. He was a member of the Council of the College of Physicians and Surgeons of Manitoba and a member of the Dominion Medical Council. From the inception of Grace Hospital he was medical superintendent, and the growth of that institution was due in some measure to his constant care and thoughtfulness. He is survived by his two daughters and a son.

**Dr. William Herbert Pepler, L.R.C.P.** London, England, died suddenly in his office on April the 30th. Well known in Toronto, Dr. Pepler had come here 56 years ago, and had graduated from Trinity College Medical School in his 21st year. After graduation Dr. Pepler returned to England and was on the staff of St. Bartholomew's Hospital for two years, after which he returned to Toronto to begin the practice of medicine.

**Dr. Thomas G. Holmes** of Holmesville, Huron County, died in Detroit on April the 16th. A graduate of Bellevue College, New York, and McGill University, he had practiced largely in the United States.

**Dr. Edward C. Levine**, associate in surgery at the Royal Victoria Hospital and demonstrator in surgery at McGill University, died at the Royal Victoria Hospital after a prolonged illness.

**Dr. William Barrett** of Southport, England, a graduate of McGill and well known throughout Eastern Canada, died at Havre, France, in his 65th year.

**Dr. John Phillips**, who had practiced in Listowel for nearly 65 years, died there on May the 4th in his 88th year.

**Dr. Charles H. Smith** of Petrolia, died on April 21st, and was buried with full military honors on April the 24th.

**Dr. John L. Murray**, a former resident of the township of West Zorra died in Toledo on May the 12th.

**Dr. T. P. O'Leary** died at his home in Westmount at the age of 88 years.

**Use of Sodium Chlorid in Treatment of Intestinal Obstruction.**—Two cases, one pyloric and the other small intestine obstruction, reported by Russell L. Haden and Thomas G. Orr, Kansas City, Kan., show the effect of the administration of chlorids by hypodermoclysis in the treatment of intestinal obstruction toxæmia. It seems proved by animal experiments that the chlorids act as a protecting agent in intestinal obstruction by reducing, in some manner, the toxæmia. It is suggested that in cases of acute intestinal obstruction that one gram of sodium chlorid per kilogram (2 1-5 pounds) of body weight be given as the initial dose, and continued daily in sufficient quantity to return and maintain the sodium chlorid in the blood within normal limits.—*Jour. Am. Med. Assoc.*, May 10, 1924.

**Meningitis.**—In a list given by Josephine B. Neal, New York, containing 1,535 cases of meningitis arranged according to age and etiology, it is seen that with the exception of tuberculous meningitis, more cases of meningitis occur in the first year of life than in any other one year. The number of cases of meningococcic meningitis in the first year of life far exceeds those in any other year. The greatest number of cases of tuberculous meningitis is found in the second year of life. In times when there is no epidemic, the number of cases of tuberculous meningitis equals or exceeds the number of cases of meningococcic meningitis. After the meningococcus, the pneumococcus and

the streptococcus are the most common causes of purulent meningitis, followed by the influenza bacillus, the staphylococcus and *Bacillus coli*, in the order named. Cases due to the last two organisms are comparatively rare. Other pyogenic organisms occasionally cause a meningitis, and, more rarely, members of the higher group of organisms, such as the members of the streptothrix group and the pathogenic yeasts. Mixed infections are rare.—*Jour. Am. Med. Assoc.*, May 3, 1924.

**Simplicity of Technique.**—George de Tarnowsky, Chicago, pleads that operating-room ceremonial is in need of readjustment. Nurses and interns—and some surgeons—are obsessed with the belief that the preparation of the field of operation, carried out with a ritual that makes a Greek church high mass look simple by comparison, will in some mysterious way prevent postoperative shock and intestinal paresis. In the observance of this ritual there is an enormous wastage of towels, sheets, suture material and solutions. Gentleness in handling tissues is an art that needs more emphasis than it is, at present, given in our teaching and writing. Preoperative starvation, purging and frightening are potent factors in the causation of postoperative shock, intestinal paresis and protracted convalescence. The simplest surgical technique, based on accurate anatomic knowledge of the issues involved, will give the best results.—*Jour. Am. Med. Assoc.*, May 10, 1924.

## Medical News from the British Empire

### GREAT BRITAIN

#### THE BRITISH EMPIRE EXHIBITION

Those fortunate enough to visit the British Empire Exhibition this year will find many exhibits of medical interest. Amongst others, we learn that in the Models Section there are two large models which bring out in sharp contrast the advantages of careful town planning. One model shows the condition into which an industrial town drifts if no effort is made to regulate the manner of its growth—factories are mixed up with residential sections, and shops with schools, dwellings are built at random, the river banks are crowded with houses, and the excess of smoke adds an aspect of grim and ugliness. In the other model one sees what may be accomplished with careful and scientific arrangement of a town; where the factories are in prescribed areas, with the prevailing wind being taken into account; the river front protected by gardens; provision made for transport of various kinds in the areas most in need of it, but with the minimum degree of interference with each other; and land reserved for food production near the town, with recreation grounds carefully placed so as to be easily accessible.

There are exhibits also with regard to the disposal of house refuse. The total amount of household refuse removed annually in England and Wales is nine million tons, made up in part of bones 27,000, glass 67,500, tins 135,000, paper 405,000, vegetable matter 720,000, with enormous quantities of cinders and dust. Plans are described for the sorting of this material so as to save much of it and so reduce the cost of disposal; special machinery being devised to sort the paper, extract the tins with magnets, and in other ways collect materials into groups. The tins can then be melted down and refined, cinders can be hardened into briquettes, and paper can be pulped and made into cardboard. There is also an exhibit illustrating the utilization of waste meat from public abattoirs.

#### PREVENTION OF RHEUMATIC FEVER

Considerable attention is being paid in England to the prevention of rheumatic fever. In this connection we note that Dr. Alfred Mantle of Harrogate, who has just been awarded the Liddle prize by open competition in this and other countries for the best essay on the cause and prevention of rheumatic fever, has decided to devote the £120 awarded, to propaganda work for educating the poorer classes in the prevention of rheumatism in childhood. Education of the public in this matter has already been begun by the Middlesex Hospital, which has issued seven pamphlets on the subject. It is endeavoured to teach that much heart trouble is of rheumatic origin and may be prevented if proper care be taken by an early examination of the throat and mouth and the treatment of certain conditions which may lead to rheumatism. The success which has attended the education of the public in the matter of tuberculosis might well be aspired to in the matter of rheumatic fever.

At a meeting of the Council of the British Medical Association in March last, there was a discussion as to the place of meeting for 1927, and in this connection very careful consideration was given to an invitation from the Canadian Medical Association to hold this meeting in Winnipeg. An invitation for the same year had also been received from Edinburgh, as 1927 would be the centenary of Lister's birth. No decision was then

made. Several members urged the acceptance of the Canadian invitation, Dr. Ridley Bailey remarking that until he went to the Montreal meeting he had never understood what hospitality really meant (!) Even admitting the attractiveness of such an invitation, however, the Chairman thought it might be best to meet in Great Britain; but it might be possible to send a contingent of members to the Canadian meeting. The question of closer co-operation with the Canadian Medical Association was taken under consideration; it was suggested to send two delegates to the meeting at Ottawa this year to discuss affiliation. The matter of the meeting place might then be discussed. Ultimately Sir Jenner Verrall was appointed as delegate to accompany the Medical Secretary.

The matter of State aid for hospitals in England is being taken up at a conference between the Executive Committee of the Labour party and representatives of various medical bodies. The discussion will centre around the question: "Should further State aid be given for the extension and maintenance of hospital accommodation?" A *Memorandum on Hospital Policy* was issued by the Labour party in 1922, which took the view that the defects of the voluntary system could only be remedied by State control; it was held that efficiency was hampered by lack of organization and co-operation. Since then, however, much has been done by the British Hospitals Association to improve organization and management; the urgent need of more beds has been recognized; not only was it shown that voluntary effort had increased the number, but that more value is being got out of them; the suggestion that State control would gradually make deficiencies good, and undertake new construction as opportunity occurred, is actually being followed under the voluntary system; the unsatisfactory conditions under which nurses worked are being greatly improved; the falling-off of voluntary contributions is not so great; while in 1915 the deficit per available bed was £15, in 1922 it was only £1. These are some of the points brought out in a discussion regarding the possible advantages of State as compared with voluntary control. The State undoubtedly has in view a perfected development of the hospital system, but those responsible for the maintenance of the hospitals under the present voluntary system have ever in mind the danger of their becoming "the plaything of the politician." The profession "can never forget the dire result, so far as public health was concerned, of dragging the National Health Insurance Act in the mire of party politics."

Mr. Ramsay Muir is quoted as saying: "While the logical Socialist would eagerly seize the chance of organizing all hospitals in a systematic way under Government or municipal control, and placing them wholly on public funds, others, while recognizing the need for public aid...would on every ground prefer to make the utmost possible use of private and voluntary effort in a field in which it has done so much good work.... We are bound to recognize that there is no sphere in which private enterprise, though insufficient by itself, has been more beneficial, more original, more spirited, more sympathetic; no sphere in which personal devotion has been more abundant or more fruitful. It is impossible for any official public system wholly to replace this spontaneous outpouring of human kindness, and it would be the greatest of blunders to discard it as if it were of no value because it is not easily fitted into a neat official scheme."

Athletic training amongst students is receiving the attention of governing bodies of the Scottish Universities. A recent conference of four universities considered the suggestion that participation in athletics by all students be made compulsory, and eventually agreed on the motion "that the Conference urges upon the Courts and Senatus of all Scottish Universities the desirability of imposing upon each student on matriculation a levy, the sum so raised to be devoted to the maintenance of students' activities in the Scottish universities." A further resolution was adopted to the effect that the most important Scottish secondary schools should be visited annually with the object of interesting those who were preparing to join the universities in the widest aspect of university student life.

A further indication of the realization by the universities of the value in sport is given in the proposal that the Senatus should be approached with a view to instituting a mid-week half-holiday during the winter and spring terms to allow for athletic training. This arrangement apparently already exists at Aberdeen University, and to a certain extent also at Edinburgh.

H. E. M.

Sir Malcolm Morris died at Bordighera in February of this year. To the profession at large perhaps his

name will be always associated with dermatological work, for his textbook has a well-established fame, and he was interested in much that was allied to the subject; he was prominent in public work for the prevention of tuberculosis and leprosy; he was one of the first to begin the treatment of lupus with the Finsen light in London, and he was largely instrumental in founding the Radium Institute of London.

But his energy and activity of mind carried him much further both in writing and in other work. He was editor of the *Practitioner* for seven years; he wrote and helped in the writing of books on public health and general medicine; he was active in obtaining the appointment of a Royal Commission on Venereal Diseases, and he worked zealously on the National Council for combating this disease. He was a Fellow of the Zoological Society, the Botanical Society, and the Sunday Concert Society, and he served on numerous Committees and Councils.

The merest sketch of his activities is enough to make it evident that he was a man with great powers of work, and was possessed of wide sympathies and had the desire for progress which is seen in great reformers. All these talents he employed and developed to the very utmost.

## News Items

### GENERAL

#### THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

The British Association for the Advancement of Science, while resembling the American Association for the Advancement of Science, nevertheless differs from it in certain particulars, and a few notes on its organization may be of interest to Americans and Canadians.

*Objects.*—"The objects of the British Association for the Advancement of Science are:—To give a stronger impulse and a more systematic direction to scientific enquiry; to promote the intercourse of those who cultivate science in different parts of the British Empire with one another and with foreign philosophers; to obtain more general attention for the objects of science and the removal of any disadvantages of a public kind which impede its progress."

*Annual Meetings.*—The Association, which was founded in 1831, meets annually for one week or longer at important centres, other than London, in England, and it occasionally meets in other parts of the British Empire. The Association has met in Canada on three previous occasions, viz. in 1884, 1897 and 1909. Other overseas meetings have been held once each in South Africa 1905, and Australia 1914. The average attendance at annual meetings of the Association for the 83 years previous to 1920 was 2,330. A proportion of the attendance consists always of residents in the locality where the meeting is held, but the large majority are visitors. The Toronto meeting affords an exceptional opportunity for intercourse between British, Canadian, American and European workers in science. A preliminary programme will be forwarded on application to the Local Secretary, British Association, Physics Building, University, Toronto, and those who intend to be present at the meeting are particularly requested to apply for this as soon as possible.

*Membership.*—No technical qualification is required on the part of an applicant for admission as a member of the Association, nor is there any limitation in respect

of nationality. The form of membership of most interest to Americans and Canadians, who are very cordially invited to join for 1924, is that of Annual Member.

Payment of \$7.50 made before or at the meeting entitles the Annual Member to attend the meeting and to receive the report. Payment of \$5.00 entitles the member to attend the Annual Meeting and the membership ticket admits the holder to any of the sectional meetings and to the various popular lectures, receptions, local excursions, etc., which are features of the meeting. Membership tickets for the meeting may be obtained from the local Hon. Treasurer, British Association, Room 50, Physics Building, University, Toronto; cheques should be made payable to the British Association for the Advancement of Science. Arrangements are being made with the Railway Companies for reduced rates on the return fares of those who hold membership cards. Hotel accommodation should be reserved in advance of the date of meeting.

*Scientific Meetings.*—The Inaugural General Meeting will be held on Wednesday, August 6th, when Major-General Sir David Brereton, K.C.B., F.R.S., will resume the Presidency of the Association in succession to Professor Sir Ernest Rutherford, F.R.S., and will deliver the Presidential Address. The Association is organized in thirteen sections designated as follows, with Presidents for 1924:—

- A.—Mathematical and Physical Science, Sir Wm. Bragg, K.B.E., F.R.S.
- B.—Chemistry, Sir Robert Robertson, K.B.E.
- C.—Geology, Prof. W. W. Watts, F.R.S.
- D.—Zoology, Prof. G. Elliott Smith, F.R.S.
- E.—Geography, Prof. J. W. Gregory, F.R.S.
- F.—Economic Science and Statistics, Sir William Ashley
- G.—Engineering, Prof. G. W. O. Howe.
- H.—Anthropology, Dr. F. C. S. Shrubshall.
- I.—Physiology, Dr. H. H. Dale, C.B.E., F.R.S.
- J.—Psychology, Prof. W. McDougall, F.R.S.
- K.—Botany, Prof. V. H. Blackman, F.R.S.

L.—Educational Science, Principal Ernest Barker  
M.—Agriculture, Sir John Russell, F.R.S.

Addresses will be delivered by the Sectional Presidents of the respective sections, and papers will be read on and after Thursday, August 7th, until the conclusion of the meeting. Joint meetings of various sections will be held also at which the following are among the subjects to be discussed.

Sections A and B—Crystal Structure and Colloid Solutions.

Sections A and G—Optical Study of Elasticity.

Sections B and I—Vitamines and the relation of light to their action.

Sections B and G—Liquid and Powdered Fuels.

Sections C and E—Changes of Sea-level in relation to Gravitation; Continental Shelves and Coral Islands. Sections I and J—Physiological and Psychological Factors of Muscular Efficiency in Industry.

Sections D and K—Species Concept.

Sections D and M—Soil Population.

Sections J and L—Tests for Scholarship and Promotion.

Sections F and M—Diminishing Returns in Agriculture.

Sections H and J—Racial Mental Differences.

During the week of the meetings a number of popular lectures will be delivered by prominent visitors. Among the titles which have been announced are:—"Human Heredity and National (or racial) Outlook," by Professor W. MacDougall, M.B., F.R.S.; "Seeing is Believing," by Professor E. P. Cathcart, M.D., F.R.S.; "Work in the Himalayas" by Professor J. W. Gregory, D.Sc., F.R.S.; "Voice Production," by Sir Richard Paget; "Disintegration of Atoms," by Sir E. Rutherford, F.R.S.; "The Importance of the Infinitely Small in Nutrition," by Professor J. C. Drummond, D.Sc. A lecture to the Workers' Educational Association will be delivered by Professor R. H. Tawney of Oxford University. The subject of the Presidential Address by Sir David Bruce will be "Advances made in our knowledge of disease (with special reference to methods developed during the war)." Additional information will be gladly supplied by the Local Secretary, British Association, Room 50, Physics Building, University, Toronto, Canada.

The meeting of the Physiology Section will commence on Thursday, August 7th at 10 a.m. with the address of the President, Dr. H. H. Dale, F.R.S., Director of the Biochemistry and Pharmacology Department of the Medical Research Council of Great Britain. This will be followed by papers from Profs. A. B. Macallum, H. E. Roaf, W. B. Cannon and A. Querido.

*Afternoon.*—Among subjects to be presented are, "Studies in Visceral Reflexes," "On the Tactile Sensory Reflex," and "Fractionate Contractions in Premature Ventricular Systoles in Mammalian Hearts." At 5 o'clock Professor J. C. Drummond will present a popular lecture on "The Importance of the Infinitely Small in Nutrition."

*Friday, August 8th, Forenoon.*—A joint discussion with the physiology section on "Physiological and Psychological Factors of Muscular Efficiency in Industry," among the eminent contributors being Profs. O. Lovatt Evans, E. A. Bott, E. P. Cathcart, C. S. Myers, and F. S. Lee.

The afternoon is reserved for demonstrations.

*Monday, August 11th, Forenoon.*—A joint discussion with the chemistry section, "Vitamines and the rela-

tion of Light to their Action." Among those taking part are Profs. J. C. Drummond, H. C. Sherman, Sir Henry Gauvain, E. Mellanby, W. H. Eddy, W. Lash Miller.

*Afternoon.*—Prof. E. P. Cathcart, F.R.S. will speak on "The Respiratory Quotient." This will be followed by six other papers on various important subjects.

*Tuesday, August 12th, Forenoon.*—Three papers on the most recent work on insulin. Among the other subjects to be dealt with may be mentioned "The effect of Absorbable Intestinal Toxins on Metabolism."

*Afternoon.*—Prof. Robert Kennedy, Glasgow, will speak on "The Present Position of Anastomosis of Nerves," and Prof. G. H. Parker on "The Carbon Dioxide Production of Nerve."

Among other contributors are Profs. P. A. Shaffer, L. B. Mendel, T. B. Osborne and D. D. Van Slyke. Various papers in the Psychology section will be of interest because of their bearing on Psychotherapy.

The President of the Victoria and district Anti-Narcotic League has forwarded to our *Journal* several pamphlets on the question of the narcotic drug traffic in Canada. We have much pleasure in publishing the following:

After a careful study of the situation this League feels that while the need is great in many cases for institutional treatment, this is but treating symptoms and not the disease. In order to stop the illegitimate traffic we must co-operate with the nations of the world in an effort to limit the growth of the poppy and the coca plant. Heretofore the Imperial Government has represented Canada in the opium conferences. If, as the Deputy Minister of Health has stated, Canada has 15,000 addicts, surely Canada should have direct representation at these conferences. As perhaps the most important of these conferences will be held next November in Europe, we feel that our delegates should be appointed at once in order to enable them to make arrangements. The following resolution was passed at a meeting of the League: "Whereas the suppression of the drug traffic can only be accomplished by the united and co-operated action of all nations, and whereas Canada in common with other countries has a vital interest in the suppression of such traffic which already constitutes a serious and insidious menace to our national welfare, therefore be it resolved, that we humbly petition the Government of Canada to take steps to have direct representation at the Opium Conference to be held in Europe this fall, and that such representation should include a minister of the Dominion cabinet and a lay representative.

This Victoria and District League strongly urges that the name of Judge Emily Murphy, authoress and police magistrate of Edmonton, should be appointed as the lay representative.

With the idea of concentrating on hospital, public health, medical and social welfare objects The Modern Hospital Publishing Co. made the preliminary announcement of a prize essay competition on the vitally important subject "The Interrelationships of Hospital and Community." Three cash prizes of \$350.00, \$150.00 and \$100.00 will be awarded and there will be such honourable mentions as may be authorized by the Committee of Awards. The general programme for the competition may be obtained from The Modern Hospital Publishing Co., 22 E. Ontario St., Chicago.

## NOVA SCOTIA

Arrangements for a two weeks' course for graduates under the auspices of the Dalhousie Faculty of Medicine, have been practically completed. This will

commence on the first of September. A particularly attractive programme has been prepared. The mornings will be given up almost entirely to operative and

other clinics, conducted by members of the Dalhousie Faculty. The afternoons will be given over to eminent teachers from other colleges. Sir Henry Grey, Drs. W. W. Chipman and L. J. Rhea, of Montreal, and Dr. R. D. Rudolf, of Toronto, have very kindly consented to give three lectures each, and Drs. Luther MacKenzie and Ross Faulkner, of New York, will also contribute to the course. Halifax offers many attractions to visitors in September, so the late afternoon and evening hours are left open for recreation. The course is offered without charge to all medical men. Dr. H. K. MacDonald is chairman of the committee, and Dr. W. Alan Curry is secretary.

At the Convocation of Dalhousie University held on the 13th of May, the medical degree was conferred on 29 candidates. The University medal in Medicine was awarded to Robert Wallace Kenney of Halifax, whose whole course has been characterized by great brilliancy. The class included two ladies, Misses Lalia Barclay Chase and Alice Evelyn Thorne.

The annual meeting of the Provincial Medical Board of Nova Scotia was held on the 9th of May. Much important business was transacted, and a resolution expressive of the regret occasioned by the death of Dr. P. N. Balcom was ordered to be registered in the minutes. Drs. John G. MacDougall and W. H. Hattie were re-elected President and Registrar, respectively.

During the month of April, 89 clinics were held at the Health Centres of the Massachusetts-Halifax Health Commission, with an attendance of 914. The special eye-clinic was continued during the month and had an attendance of 136. Ninety-five children attended the pre-school age dental clinic for prophylaxis and treatment. The nutrition classes, held at both centres on Friday and Saturday of each week, had an attendance of 401 children. During the month the

public health nurses paid 4,806 visits in the homes for home teaching purposes. The tuberculosis examiner made 23 chest examinations eight of which were in consultation with city doctors, while his assistant made 15 examinations. The Commission's pathologist examined 51 specimens during the month. This work included 20 urinalyses, nine blood pictures and 16 sputa.

For the annual meeting of the Medical Society of Nova Scotia, to be held at Amherst on the 16th and 17th of July, addresses have been promised by Drs. H. M. Little and A. Pirie of Montreal, in Obstetrics and Radiology respectively; by Dr. Stewart Pritchard, of Battle Creek, in Medicine, and by Dr. George D. Stewart, of New York, in Surgery. Other speakers will include Professor S. Lyle Cummings, of Cardiff, Wales; Dr. W. E. Wodehouse, of Ottawa, and Dr. T. C. Routley, of Toronto. The executive is to meet on the evening of July 16th; an informal smoker will also be held at the Marshlands Club. On the afternoon of the 16th, the doctors are to be motored across the isthmus of Chignecto and afforded numerous glimpses of the beauties of the shore of Northumberland Strait, while the ladies will be entertained at the golf club. A dinner and business session at the Parish House will complete the day's programme. Tea for all at the golf club is the entertainment planned for the afternoon of the 17th, to be followed by a public meeting in the evening. The freedom of the Marshlands Club and the golf club will be extended to both members and their wives. As hotel accommodation is limited, those planning to attend should communicate with Dr. Ross Miller the chairman of arrangements.

The Halifax branch of the Medical Society of Nova Scotia closed a very successful session in April. The meeting was held at the Green Lantern, and took the form of an informal smoker. Officers elected for the new year include Dr. E. V. Hogan, President; Dr. F. R. Little, Vice-President, and Dr. W. L. Muir, Secretary, with the support of a strong executive.

## PRINCE EDWARD ISLAND

The Maritime Branch of the American College of Surgeons will meet with the Prince Edward Island Medical Society at Charlottetown on July 9th and 10th. An attractive programme is being prepared and the Committee expects many of the leading surgeons of

Canada and the United States to attend this meeting. Anyone planning to be present should communicate with Dr. S. R. Jenkins, Charlottetown, Chairman of the General Committee.

## QUEBEC

The new Notre Dame Hospital on Sherbrooke Street East is rapidly being completed and is expected to be ready for patients very shortly. It is a handsome building with a frontage of 400 feet and a depth of 230 feet, and faces Lafontaine Park thus assuring abundance of fresh air. This property was the gift of the late Sir Rodolphe Forget who gave it as a hospital site some twenty years ago. Dr. O. F. Mercier is the Medical Superintendent.

The Revd. Canon Allan P. Shatford, Grand Master of the Freemasons of Quebec, formally laid the corner stone of the Shriners Hospital for Crippled Children to be erected immediately adjacent to the Children's Memorial Hospital on the southern slope of the mountain. This hospital will be one of a chain of similar

institutions now built, or being built, throughout the continent by the Nobles of the Mystic Shrine, an auxiliary of the Masonic order responsible for the alleviation of distress, suffering and want among those unable to help themselves. It is estimated that the hospital will cost between \$400,000 and \$500,000.

An interesting address on Psycho-analysis and its application to the diagnosis and treatment of the various neuropathies was delivered in Quebec by Dr. Brosseau of the Hospital St. Michael of Archangel.

In the report furnished by Dr. Boucher, Director of Public Health for the City of Montreal, we note that 940 deaths were recorded in the months of April, of whom 131 were due to tuberculosis. Infant mortality

showed a definite diminution over the average for April during the past four years. Infectious and contagious diseases totalled 1,203 cases, with 181 deaths, a marked improvement over the corresponding period in 1923.

A group of the professors of the Faculty of Medicine in the University of Montreal are making a trip to the United States in the interest of the university which is about to commence the erection of their new buildings on the slope of the mountain. At the present they propose visiting the different faculties of medicine in Boston, Baltimore, New Haven, Cleveland and St. Louis, and will endeavor to acquaint themselves with all information possible regarding the teaching facilities of these schools of medicine.

The Kiwanians are erecting a new building for the Children's Memorial Hospital, to be devoted to tubercular patients. It will contain twenty beds, and in addition will have massage rooms with apparatus, surgical rooms, and toilet and supply rooms. The design for the whole is most attractive and picturesque. This building will be a most desirable addition to the hospital and is much needed.

The residence of the late Lord Shaughnessy is being fitted up to act as a temporary home of the St. Mary's Memorial Hospital. It is to have twenty public beds and a few private rooms, and is open to the patients of all reputable medical practitioners.

In the report of the Montreal Maternity Hospital for 1923, the following facts are emphasized:—the absence of maternal mortality; the small number of foetal deaths — a decrease of twelve on last year's figures; the low percentage of maternal morbidity—out of 373 viable infants born, 370 were discharged well; the excellent results obtained from the prenatal clinics stationed through the city, and the splendid assistance given by the pediatric staff of McGill University in the supervision of the new-born.

We note that Dr. P. H. Bedard of Montreal has received from the French Government, the rosette for services as Public Instruction Officer.

Dr. L. P. Ereaux, BSc., graduate of McGill University, has been appointed to the post of medical officer in the Laurentide Health Service at Grand'Mere.

## ONTARIO

The Brant County Medical Society met on March 23th; an address was given by Dr. W. W. Lailey on "Modern Views on the Toxaemias of Pregnancy."

At a meeting of the Stratford Medical Society on March 13th, Dr. F. W. Rolph gave an address on "The Principles of Treatment in Chronic Gastro-Intestinal Disease."

Dr. J. M. D. Olmsted gave two interesting addresses on the Nervous System to the members of the Essex County Medical Society on March 14th.

On March 18th, the Welland County Medical Society met at Welland; Dr. Geo. Boyer of Toronto, gave an address on "The Diagnosis and Treatment of Infectious Diseases of the Nervous System."

Dr. Alan Brown of Toronto, attended the meeting of the North Bay Medical Society on March 18th, giving an address on "Deficiency Diseases: The Etiology and Cure of Rickets, Scurvy and Tetany."

At a meeting of the Orillia Medical Society on March 18th, Dr. Chas. H. Gilmour gave an address on "The Diagnosis of Diseases of the Kidneys, Ureters and Bladder."

The South Waterloo Medical Society met on March 20th, when an address was given by Dr. Perry Goldsmith of Toronto on "The Management of Some Common Complaints among Oto-laryngological Patients."

The Stratford Medical Society met on March 20th, when Dr. Harold Tovell gave an address on "The Present Day Status of the X-Ray Examination in the Early Diagnosis of Pulmonary Tuberculosis."

Professor N. B. Taylor of the University of Toronto addressed the Essex County Medical Society on March 21st, at both an afternoon and evening session, on "The Ductless Glands," and "Digestion."

At a meeting of the Lincoln County Medical Society on March 25th, Dr. Perry Goldsmith gave an

address on "The Management of Some Common Complaints Among Oto-laryngological Patients."

The Stratford Medical Society met on March 27th, when an address was given by Dr. N. B. Taylor on "The Physiology of the Ductless Glands."

Professor J. J. R. Macleod of the University of Toronto, addressed the Essex County Medical Society on March 28th, on "Respiration and Acidosis."

At a meeting of the Lambton County Medical Society at Sarnia on April 2nd, Dr. W. G. Ogden gave a lantern slide demonstration on Pulmonary Tuberculosis.

At a meeting of the Stratford Medical Society on April 3rd, Dr. R. R. Macgregor of Kingston gave an address on "Pyelitis of Infancy."

The St. Thomas Medical Society held a meeting on April 4th. Dr. Geo. S. Strathy of Toronto gave an address on "The Differential Diagnosis of Pain in the Back."

The Niagara Falls Medical Society held a meeting on April 8th. Dr. N. S. Shenstone of Toronto, gave an address on "Empyema."

On April 10th, Dr. W. H. Dickson of Toronto, addressed the Brant County Medical Society at Brantford on the subject, "The Diagnosis of Conditions of Gastro-Intestinal Tract and of Gall Bladder by the Use of X-Ray."

Dr. Geo. S. Young of Toronto, addressed the Stratford Medical Society on April 10th, on "Psychotherapy from the Standpoint of the General Practitioner."

The Welland County Medical Society met in Welland on April 15th, when Dr. H. I. Kinsey gave an address on "Differential Diagnosis in Chest Diseases."

On April 15th, Dr. W. B. Hendry of Toronto ad-

dressed the Orillia Medical Society on "The Surgical Treatment of Prolapsus Uteri."

At a meeting of the Sault Ste. Marie Medical Society on April 19th, Dr. G. McLarty of Toronto gave an address on "The Examination of a Neurological Case."

The Niagara District Medical Society met at St. Catharines on April 22nd when Dr. A. A. Fletcher of Toronto gave an address on "The Diagnosis and Treatment of Chronic Arthritis."

Dr. F. W. Marlow of Toronto, addressed the Oxford County Medical Society at Ingersoll, on April 23rd, on "Uterine Haemorrhage."

On April 24th, the South Waterloo Medical Society met at Galt, an address being given by Dr. H. S. Hutchison on "The Treatment of Renal Disease."

At a meeting of the Wellington County Medical Society on April 24th, the following addresses were given:—"Tumours of the breast," by Dr. Alex. Primrose; and "The Diagnosis, Prognosis and Treatment of Cardiac Irregularities," by Dr. John Oille.

The York County Medical Society held a meeting on April 24th at the home of Dr. Hill at Lansing. Dr. E. Stanley Ryerson gave an address on "The Pathology of the Gall Bladder and Bile Ducts, and its Relation to the Clinical Manifestations of Disease and the Surgical Treatment Indicated."

At the meeting of the Western Ontario Academy of Medicine on Thursday, April 17th, Dr. John Comrie, Professor of Medicine University of Edinburgh, was the guest of honour. Dr. Comrie gave first, a fifteen minute lantern demonstration on "Scurvy," showing pictures taken in Russia during the great war; he then gave a clinical lecture on "Nephritis," and later addressed the Students Historical Society, taking as his subject, "Four centuries of anatomy in Edinburgh." The next session of the Western Ontario Academy will be on May the 30th, convocation day of Western University; Dr. Allan Kanavel of Chicago, will be the speaker of the day.

Dr. E. M. Watson has been appointed lecturer on pathological chemistry on the faculty of the Western University; Dr. Watson will also act as a consulting pathologist for the Victoria Hospital.

Dr. T. W. G. McKay, M.H.O. of Oshawa, has been appointed one of the examiners in medicine for the final examination set by the College of Physicians of Ontario.

The doctors of Weston have undertaken the establishment of a child welfare clinic, nurse Douglas of the Provincial Health Department is to act as supervisor.

Hospital Day was celebrated in London, Ontario on May the 12th, and each of the seven institutions there reported a large number of interested visitors and well wishers. The Minister of Health, Honorable Dr. Forbes Godfrey, visited the different institutions at various times through the day, and made the announcement at the Institution of Public Health that he hoped to be able to reduce the cost of insulin from a cent and a half to one cent per unit.

Benjamin Franklin's Society, the Philosophical Society of Philadelphia, perhaps the most ancient and honorable of the scientific societies of this continent,

have bestowed the John Scott gold medal for scientific accomplishment on Dr. Banting. The sum of \$1,000.00 is awarded with the medal.

On Friday evening May the 14th, the members of the Harvey Club of London, were the guests of Dr. Harry Protton at Byron Sanitorium. Dr. George D. Porter, director of medical services of the University of Toronto, under the title of "The Stethoscope" outlined the history of medicine from Hippocrates to the time of Laennec, and dealt at length with the experiments which resulted in the introduction of the stethoscope.

The University of Western Ontario has issued its announcement for 1924-1925, of the Faculty of Public Health. The publication includes also the eleventh report of the Institute of Public Health.

The thirteenth "Mary Scott Newbold lecture" in the College of Physicians of Philadelphia, was delivered by Dr. J. G. Fitzgerald, Professor of Hygiene and Preventive Medicine, University of Toronto, and director of the Connaught Laboratories. The subject chosen for the lecture was a review of some of the recent work on the diagnosis, prevention, and treatment of diphtheria.

An excellent report on "Morphinism" by C. Edouard Sandoz, M.D., of the Municipal Court of Boston, has been issued in pamphlet form by the Department of Health at Ottawa. This report of the Medical Director of the Municipal Court of Boston, is reprinted from the *Journal of Criminal Law and Criminology*, Vol. 13, No. 1, May, 1922, and is an excellent résumé of the subject which is taken up in the following plan. 1st, Morphinism in general; 2nd, Problems of morphinism in the Municipal Court. The whole subject is carefully handled, and to any one interested in the subject the folder will appeal by its brevity and clearness.

The following figures show the result of the examination for adolescent goitre in 332 girls in the Technical School of London, March, 1924. This examination was conducted by the Institute of Public Health, and is reported by Dr. H. W. Hill.

The 332 girls from 12 to 20 years old, showed 59 enlargements of the neck in the situation of the thyroid gland. Thus 17% or about one in 6 of the total 332 were affected. Of these, 15 or about 25% had been previously seen and diagnosed by a physician. The remaining 44 (about 75%) had not been seen by any physician although many of the students and their families were aware of the enlargement; but they did not recognize it as serious.

It is striking that between the ages 13 and 16 inclusive, a definite and marked increase in incidence of enlargement was evident. It may be of interest to note that a comparison of the nutritional condition of the 59 goitrous girls with that of the remaining 273 non-goitrous girls showed the former somewhat better on the weight-for-height-and-age basis, thus:

Proportions:	Non-	
	Goitrous	Goitrous
10 or more per cent. overweight .....	13	16
10 or more per cent. underweight ....	26	30
normal (within 10% of correct weight)	60	54
	99	100

These figures are based on too small a number of units to mean much, but they indicate a slightly better (i.e. nearer average) weight amongst goitrous than non-goitrous.

## MANITOBA

At Dauphin the Northern Manitoba Medical Association was organized with the following officers:—President, Dr. W. J. Harrington, Dauphin; Vice-President, Dr. G. D. Shortreed, Grandview; Secretary, Dr. N. G. Trimble, Dauphin; Executive, Dr. Wm. Morrison, Gilbert Plains; Dr. Moore, Glenella.

Dr. E. W. Montgomery addressed the meeting on the subject of Diabetes.

A large fireproof addition to the Nurses Home of the Winnipeg General Hospital has recently been opened.

Work has begun in connection with a tuberculosis survey of one thousand school children of Winnipeg. The survey will be carried out by Dr. D. F. McRae, assisted by a number of Winnipeg physicians. The survey was made possible by a bequest and by a grant from the Manitoba branch of the Canadian Red Cross.

At Portage la Prairie the Central Manitoba

Society came into being and has requested affiliation with the Manitoba Medical Association. The officers of the new society are:—President, Dr. W. E. Metcalfe, Portage la Prairie; Vice-President, Dr. J. R. Martin, Neepawa; Sec-Treas., Dr. G. A. Hassard, Portage la Prairie. Executive members—Dr. J. L. Lamont, Treherne; Dr. A. J. Swan, Macgregor. Following the meeting Dr. E. W. Montgomery gave an address on Rheumatoid Conditions.

Dr. Gordon S. Fahrni, President of the Manitoba Medical Association, Dr. N. W. Warner, Secretary; Dr. E. W. Montgomery, Professor of Medicine, University of Manitoba and Dr. T. C. Routley, Associate Secretary of the Canadian Medical Association, visited Portage La Prairie on April 22, and Dauphin on April 23 to effect organization of Central and Northern Manitoba districts. At both points highly successful meetings were held despite the fact that the bad roads prevented some practitioners from attending.

## BRITISH COLUMBIA

The 26th Annual Meeting of the Vancouver Medical Association was held in Vancouver on the 17th of April, when Dr. H. H. Milburn was elected President for the current year. Dr. Stanley Paulin was chosen for Vice-President and Drs. O. S. Large and A. J. MacLachlan for Secretary and Treasurer respectively. The new Executive is taking energetic hold; plans to have an interesting programme prepared for the winter sessions.

Dr. T. R. Poynton, late Superintendent of the Vancouver General Hospital, has accepted an appointment as Superintendent of the hospital at Hollywood, California.

Dr. Alison Cumming has just returned to the city after a trip to New York and other Eastern points.

Dr. Geo. E. Seldon is leaving for Ottawa on the 22nd instant to attend the meeting of the Medical Council of Canada.

Dr. W. S. Turnbull has been, for the past three weeks, a patient in the Vancouver General Hospital. He is now home again and rapidly regaining his health.

Registrations are coming in rapidly for the meeting of the Pacific Northwest Medical Association in Vancouver on June 26th, 27th and 28th, and we confidently expect this will prove to be one of the best attended and most interesting Medical Conventions ever held in our city. The visits of the British and American Fleets which will lie in our wonderful harbour during the convention week will doubtless prove an added incentive to intending visitors. Several speakers in addition to those already announced will be present, among them Dr. S. A. Kinnear Wilson, the eminent neurologist of London, England, and Dr. Joseph Brennemann of San Francisco.

The Annual Meeting of the North Pacific Paediatric Society is to be held in Vancouver on Wednesday, June 25th, preceding the meeting of the Pacific Northwest Medical Association on June 18th.

The fourth luncheon of the B. C. Medical Association was held at the Ambassador Cafe, Vancouver, on the 9th May, at which there was a very large attendance.

An able and instructive address was given by President L. S. Klinck, M.S.A., D.Sc., of the University of British Columbia, who, in speaking on "Some Aspects of University Policy," gave some pertinent facts and figures on work of the University since its opening nine years ago. Dr. R. E. McKechnie, Chancellor of the University, was in the Chair, and introduced the speaker in a few well-chosen remarks.

Dr. J. M. Pearson, in proposing a vote of thanks to Dr. Klinck, eulogized the work of the University Staff and thought the people of British Columbia were to be congratulated in having one of the most efficiently run medical institutions in the Dominion. It should receive the strongest possible support from the public. The resolution was seconded by Dr. Lachlan Macmillan and heartily endorsed by those present.

The Annual Meeting of the B. C. Medical Association will be held on June 25th, the day prior to the opening of the Pacific Northwest Medical Association Conference. A record attendance is expected.

Mr. C. J. Fletcher, the Executive Secretary of the B. C. Medical Association, has just completed a tour through the Okanagan and Kootenay Districts, and a second trip to Victoria, visiting every doctor individually and bringing him up-to-date with the activities of the Association. These visits appear to be greatly appreciated, especially by the country doctors who, otherwise, would not be able to keep in touch with things. Membership fees were paid with alacrity, and the opinion freely expressed that the Association, whilst yet comparatively a young organization, was destined to become indispensable to the interests of the profession. It is realized that the membership fee is somewhat high, and it is hoped to make some modification next year.

The Fraser Valley Medical Society held its annual meeting at the Royal Columbian Hospital, May 1st, 1924. Dinner was served at 6.30, after which, the following officers for the year 1924-25 were elected:—Dr. T. B. Green, President; Dr. Geo. Sinclair, Vice-President; Dr. D. A. Clarke, Secretary-Treasurer. Advisory Committee to Hospital Management:—Dr. E. J. Rothwell, Dr. E. H. McEwen, Dr. H. L. Cullins.

Dr. Lyle Telford of Vancouver then addressed the

Society on the question of Medical Health Insurance, presenting the subject in a most thorough manner. The address was followed by a keen discussion, in which Dr. Telford was bombarded with questions, showing the interest all are taking in this matter.

Dr. E. J. Rothwell has recently been appointed to the Senate of the B. C. University. Dr. Rothwell has been taking an active interest in educational subjects, being chairman of the School Board for the past two years.

Dr. W. Sager of Port Simpson, who has a peculiar but interesting practice on the Northern shores of British

Columbia, is at present spending a few days in Vancouver, after an absence of seven years. He attended the luncheon on the 9th, and was agreeably surprised to find that so many medical men could be got together on such an occasion.

The many friends of Dr. W. A. Clarke of New Westminster, will be pleased to know that he has quite recovered from his recent severe illness.

The Annual Meeting of the No. 6 District Medical Society will be held at Nanaimo on the 20th May. A clinical address will be given by Dr. Wallace Wilson of Vancouver.

**The Control of Epidemics.**—The study of epidemiology has for the most part been prosecuted by statistical methods. The facts of the existence of individual diseases, the morbidity and mortality that attend them, the degree and extent of their distribution, and their possible correlation with other existing phenomena have been considered on the basis of data furnished by the actual circumstances of life. Although the application of experimental methods to the investigation of the etiology, transmission, pathology, therapy and prevention of individual maladies has long been fruitful, a comparable technique has as yet scarcely found employment in the field of epidemiology. Notable exception to this statement is found in the studies by Topley, in England, and by the Rockefeller Institute for Medical Research in this country on an epidemic disease, mouse typhoid, experimentally induced in laboratory animals. In reviewing the results of these elaborate investigations, which have now extended over a number of years, Webster has reminded us that the equilibrium of an infectious disease in a given community is determined essentially by the factors of microbial distribution, microbial virulence, and host susceptibility. To avert or modify epidemic occurrence, one or more of these factors must become the subject of alteration. The ability of bacteria to multiply in the tissues of a host, thus leading to disease or death—in other words, microbial virulence—appears to be a relatively fixed quality; at any rate, it cannot readily be altered in nature, however easily changes may be induced in the laboratory cultures. In the New York studies it was found, for example, that several paratyphoid-enteritidis strains, isolated from man and animals and related antigenically, differed markedly in pathogenicity; but the inherent virulence of each strain

remained constant. Hence, individual strain virulence among such ubiquitous bacilli may be regarded as a relatively fixed quality. Racial immunities develop only with time. This factor can at best be modified very slowly, if at all. Consequently, the control of epidemics must base its greatest hope of success for the present on influencing microbial distribution. Of course, individual susceptibilities may be influenced by general environment conditions, such as hygiene and diet; but, in a larger way, the hope of marked progress lies in the prevention of the distribution of the harmful species of micro-organisms.—*Jour. Am. Med. Asso.*, May 3, 1924.

**Multiple Neuritis Following Carbon Monoxide Poisoning.**—George Wilson and N. W. Winkleman, Philadelphia, report three cases, two with necropsy, of patients who had evidences of polyneuritis occurring as a sequel to gas poisoning. These patients had clinical evidence of multiple neuritis, although the picture was unusual in that the deep reflexes were increased, due in all probability to the involvement of the globus pallidus or of the cortex or of both. In one of the cases in which no necropsy was obtained, a paradoxical condition was found in that there was spasticity and increase of the deep reflexes at the knees, while at the ankles flaccidity and lost reflexes were found. The authors believe that multiple neuritis occurring as a sequel to carbon monoxide poison is probably much more frequent than is commonly believed, yet direct pathologic evidence of such an involvement is practically unknown in the literature. The peripheral nerves are not often removed at necropsy, and this is probably why changes in these parts are not more frequently discussed.—*Jour. Am. Med. Assoc.*, May 3, 1924.

## Canadian Medical Association

### CONSTITUTION AND BY-LAWS

#### ARTICLE I.—TITLE

This Association shall be known as the Canadian Medical Association.

#### ARTICLE II.—PURPOSES AND OBJECTS

The purposes and objects of the Association are:—  
 (a) To cultivate the science of medicine and surgery;  
 (b) To advance the character and honour of the medical profession;

(c) To further unity and harmony among its members;

(d) To ensure the observance of legal duties and obligations imposed on the profession in medical matters by the different statutes or the principles of ethics to be established by the Association;

(e) To promote the public health;

(f) To elevate the standard of medical and nursing education, both undergraduate and post-graduate;

(g) To conduct or assist in the conducting of clinics;

(h) To assist in the advancement of medical legislation for the good of the public and of the profession;

(i) To study and to advance by any means in its power the improvement and standardization of hospitals;

(j) To conduct or assist in conducting research work in connection with the different medical problems that from time to time confront the profession;

(k) To raise by subscription from public and private bodies or persons, and in any other proper or legal manner, funds for the proper carrying out of the objects herein contained, and to expend the moneys so raised in the furtherance of these objects; and, to establish any necessary trusts for the better carrying out of the foregoing;

(l) To establish such committees as may be advisable for the carrying out of these objects, and to delegate any necessary powers of the Association to such committees;

(m) To serve humanity and the medical profession by investigation, study and research work in connection with all matters in which the profession can properly interest itself and to do any necessary act or thing in the premises;

(n) To establish such branches as may be considered advisable or necessary;

(o) To publish or assist in publishing any journal dealing with medicine or allied sciences;

(p) And such other lawful things as are incidental or conducive to the welfare of the public and of the medical profession.

#### ARTICLE III.—ETHICS

The Code of Ethics of the Association shall be such as may be adopted by the Association from time to time. An official copy shall be kept in the possession of the Secretary and shall be open to inspection at all times. A copy shall be supplied to all members of the Association.

#### ARTICLE IV.—MEMBERSHIP

The Association shall be composed of ordinary, associate and honorary members.

Ordinary members shall be (a) regularly qualified medical practitioners resident in Canada; (b) members of the Army and Navy Permanent Medical Services in Canada; and (c) graduates in medicine engaged in teaching or research in Canadian Institutions.

Associate members shall be regularly qualified medical graduates of good standing residing outside of Canada.

Honorary members shall be persons who have distinguished themselves and have risen to eminence in medicine or the allied sciences.

Senior members shall have attained the age of 70 years and shall be elected by unanimous vote of Council present and voting.

#### ARTICLE V.—BRANCH ASSOCIATIONS

The Provincial Association in each province may, by special resolution of such Association, become a branch of the Canadian Medical Association by subscribing to its Constitution, By-Laws and Code of Ethics, and by securing the approval of the Council. They shall submit to Council a copy of their Constitution and By-Laws and such amendments as may be made from time to time.

#### ARTICLE VI.—AFFILIATED SOCIETIES

Any nationally organized Medical, Scientific or Sociological Body may become affiliated with the Canadian Medical Association by securing the approval of the Council. They shall submit a copy of their Constitution and By-Laws and such amendments as may be made from time to time.

#### ARTICLE VII.—MEETINGS

The meetings of the Association shall be held annually, and on such other occasions as may be considered desirable by the Council, time and place to be determined by the Council.

#### ARTICLE VIII.—OFFICERS

The officers of the Association shall be a President, a President-elect, a Vice-President for each Province, a Chairman of the Council, a General Secretary and a Treasurer.

#### ARTICLE IX.—THE COUNCIL

The Council shall consist of:—

(a) The officers;  
 (b) Delegates elected by the Provincial Branch Associations, as follows:—

Each Provincial Branch Association shall be entitled to elect, in addition to its President and Secretary, or Joint Secretaries, three delegates to serve on the Council, for its membership in the C.M.A. of from fifteen to fifty; four delegates for its membership from fifty-one to one hundred; five delegates for its membership of from 101 to 300; and, thereafter, one delegate for every 300 of a membership above 300.

(c) One delegate for each affiliated medical, scientific or sociological body.

(d) Chairmen and Secretaries of Association Committees;

(e) Chairmen of scientific sections of the Association.

#### ARTICLE X.—COMMITTEES

The committees shall be (a) Standing; (b) Special.

(a) The Standing Committees shall be appointed by the Council:—

(1) The Executive Committee;

(2) The Committee in Charge of the Legislative Bureau;

(3) The Committee on Medical Education;

(4) The Committee on Necrology;

- (5) The Committee on Constitution and By-Laws;
  - (6) The Committee on Intra-Canadian Relations;
  - (7) The Committee on Publicity;
  - (8) The Committee on Ethics and Credentials;
  - (9) The Committee on Public Health;
  - (10) The Committee on Economics;
  - (11) The Committee on Pharmacy.
- (b) Special Committees may be appointed, (a) by the President; (b) by the Council; (c) by the Executive Committee.

#### ARTICLE XI.—FUNDS

Funds for the purposes of the Association shall be raised by an annual fee from each ordinary member, the amount of such fee to be determined by the Council; from the Association's publications, and in any other manner approved by the Council.

#### ARTICLE XII.—THE ASSOCIATION YEAR

The Association Year shall be the calendar year.

#### ARTICLE XIII.—AMENDMENTS

The Constitution may be amended provided notice of motion is placed in the hands of the General Secretary six months before the date of the annual meeting. Amendments may be suggested by the Executive Committee without notice of motion. The proposed amendments must be published in the *Journal* in the two issues preceding the annual meeting. No amendment shall become effective until sanctioned by a two-thirds vote of the Council present and voting.

#### BY-LAWS

##### CHAPTER I.—MEMBERSHIP

**Section 1.**—Any physician residing in Canada may be elected by the Council an *Ordinary Member* of the C.M.A. provided that,

- (a) He is a member in good standing in his Provincial Association; except that, where no such Association is organized, he may be elected by Council after being nominated by two members in good standing in the Association; and,
- (b) He pays the annual fee and subscribes to the Constitution and By-Laws and Code of Ethics of the Association. If by March 31st the annual fee for the current year has not been paid, membership automatically lapses and the *Journal* is discontinued. Reinstatement at any time during the current year may be obtained by payment of the current fee.

**Section 2.**—*Associate Members* may be elected by the Council from amongst regularly qualified medical graduates residing outside of Canada. Associate members shall have no voting power and shall not be called upon to pay any fees.

**Section 3.**—*Honorary Members* may be nominated by any member of the Association and shall be elected only by unanimous vote of the Council present and voting. Not more than five honorary members may be elected in any one year, and, at no time shall the list of living honorary members exceed twenty-five. Honorary members shall enjoy all the rights and privileges of the Association, but shall not be required to pay an annual fee.

**Section 4.**—*Senior (Life) Members*—Any member of the Association in good standing who has attained the age of 70 is eligible to be nominated by any other member of the Association in good standing for senior membership, but shall be elected only by the unanimous vote of the Council present and voting. Not more than ten such senior members may be elected in any one year. Senior members shall enjoy all the rights and privileges of the Association, but shall not be required to pay any annual fee.

**Section 5.**—So long as a member conforms to the Constitution and By-Laws and Code of Ethics, he shall retain his membership and have all the privileges and powers thereof, provided that any member whose annual fee shall not have been paid on or before the 31st day of March of the current Association year, shall, without prejudice to his liability to the Association, be suspended from all privileges of membership. Any member whose name has been removed from his Provincial Medical Association for unprofessional conduct, shall, upon representation from such Association to the Council, have his name removed from this Association.

**Section 6.**—No member shall, except in case of his death, or expulsion, or of his ceasing to be a member under the previous provisions of this chapter, cease to be a member without having given notice in writing, to the General Secretary of the Association not less than one month before his next annual fee is due, of his intention in that regard, and having paid all arrears of fees due by him.

**Section 7.**—Any delinquent member having once failed to comply with the sections of this article shall not be restored to membership until all such dues, as may be determined by the Council, have been paid, and satisfactory evidence produced that he retains his membership in a Provincial Branch, if admitted through such channel.

**Section 8.**—No member shall take part in the proceedings of the Association, nor in the proceedings of any of the sections thereof until he has properly registered and paid his annual dues for that and previous years.

##### CHAPTER II.—GUESTS AND VISITORS

**Section 1.**—Medical practitioners and other men of science residing outside of Canada may attend the annual meeting as guests of the President or of the Council, or as visitors when vouched for by the General Secretary. They shall register with the General Secretary without payment of fee and may, after proper introduction, be allowed to participate in the discussions of a purely scientific nature.

**Section 2.**—Lay members of affiliated associations or societies may, upon invitation by the President, attend the Annual Meetings and participate in the discussions of a purely scientific nature.

**Section 3.**—Medical students may be admitted as visitors to either the general meetings or to the meetings of any of the sections thereof, but shall not be allowed to take part in any of the proceedings. They shall be vouched for by a member of the Association to either the President or the General Secretary.

##### CHAPTER III.—ANNUAL MEETINGS

**Section 1.**—The place of meeting shall be decided upon by the Council, and shall be announced as early as possible.

**Section 2.**—When the C.M.A. meets in any Province where there is a branch Association, the meeting shall be held in conjunction with the Branch Association, and the local Association or Society shall have control of the arrangements under the direction of the Medical Association of the Province and the General Secretary of the C.M.A.

**Section 3.**—The meetings shall consist of general sessions and scientific sections.

**Section 4.**—The President shall preside at all general meetings. In his absence, or upon his request, one of the Vice-Presidents shall preside.

**Section 5.**—The Rules of Order which govern the proceedings of the House of Commons of Canada shall

be the guide for conducting all meetings of the Association.

#### CHAPTER IV.—MEETINGS OF SECTIONS

*Section 1.*—The sections to be held at any Annual Meeting shall be determined by the Council.

*Section 2.*—The Chairman and Secretary for each section shall be appointed by the Association or Society in charge of the annual meeting.

*Section 3.*—The Chairman shall preside at all meetings of the section, and with the aid of the Secretary, shall arrange for the papers and others business of the section.

*Section 4.*—The Secretary shall keep a correct account of the transactions and record them in a special minute book provided by the General Secretary. The Chairman must verify and sign the minutes which must be returned to the General Secretary at the close of the meeting.

#### CHAPTER V.—ELECTION OF OFFICERS

*Section 1.*—Any five members of the Association may hand to the General Secretary, in writing, not later, than the first day of the annual meeting, the name of a member whom they may wish to nominate for any office.

*Section 2.*—The President Elect, after nomination shall be elected by the Council. Other officers of the Association shall be appointed by the Council.

#### CHAPTER VI.—DUTIES OF OFFICERS

*Section 1.*—The President shall preside at the general sessions of the Association and shall perform such duties as custom and parliamentary usage require. He shall deliver a Presidential Address. He shall be a member ex-officio of all committees.

*Section 2.*—The President-elect shall assume office at the close of the first general session of the next annual meeting following his election.

*Section 3.*—The Vice-President shall assist the President in the performance of his duties. The Vice-President of the Province in which the meeting is held shall be the 1st Vice-President of the Association for that year.

*Section 4.*—The General Secretary shall be also the Secretary of the Council and also of the Executive Committee of the Association. He shall give due notice of the time and place of all annual and special general meetings, by publishing the same in the official journal of the Association, or if necessary, by notice to each member. He shall keep the minutes of each meeting of the Council and the Executive Committee, in separate books, and shall provide minute books for the secretaries of the different sections which he shall see are properly attested by both chairmen and secretaries thereof. He shall notify the officers and members of Committees of their appointment and of their duties in connection therewith. He shall conduct all correspondence of the Association and shall publish the official programme of each annual meeting. He shall preserve and index the archives, the public transactions, essays, papers, and addresses of the Association, and shall perform such other duties as may be required of him by the President, the Council, or the Executive Committee. All his legitimate travelling expenses shall be paid for him out of the funds of the Association, and he shall receive for his services a salary to be determined by the Council.

#### SECTION 5.—THE TREASURER

1. Shall receive and collect from the members the annual fees and demands of the Association.

2. He shall be the custodian of all moneys, securities and deeds, the property of the Association.

3. He shall pay by cheque only—such cheques to be countersigned by Chairman of Council or other authorized officer of the Association and covered by voucher.

4. He shall prepare an annual financial statement audited by a chartered accountant.

5. He shall furnish a suitable bond for the faithful discharge of his duties, the cost of which shall be borne by the Association.

6. He shall receive for his services an honorarium to be determined by the Council. He shall be reimbursed for his legitimate travelling expenses incurred in attending the annual meeting.

The Chairman of Council shall preside at all meetings of the Council. He shall be reimbursed for his legitimate travelling expenses incurred in attending the annual meeting.

#### CHAPTER VII.—THE COUNCIL

*Section 1.*—The Council shall meet at least two days previous to the opening of the Annual Meeting of the Association; and thereafter while the Association is in session, the Council shall meet daily. During the interval between the Annual Meetings, the Council shall meet at the call of the Executive Committee.

*Section 2.*—For all meetings of the Council, due notice shall be sent to each member stating the business of the meeting.

*Section 3.*—The Council shall have supervision of all properties and of all financial affairs of the Association. It shall, through its officers, conduct all the business and correspondence. It shall keep a record of the transactions of all its meetings and of the receipt and expenditure of all funds, and shall report upon the same in the *Journal* after the Annual Meeting. In the case of a vacancy in any office, on account of death or otherwise, during the interval between the Annual Meetings of the Association, it shall have the power to appoint successors. Before the close of each Annual Meeting, it shall elect a President-elect, select a place for the next Annual Meeting, and present a list of all standing and special committees and the members thereof.

*Section 4.*—In order that the business of the Association may be facilitated during the interval between its Annual Meetings, the Council shall appoint a committee of ten from among its members, which shall be known as the Executive Committee, which shall meet before the close of the Annual Meeting at which it is elected, and elect its own Chairman. In all the business affairs of the Association, it shall represent the Council, and to it shall be delegated all the rights and powers of the Council. The President and President-elect shall be ex-officio members of the Committee. The Executive Committee shall report to the Council at the Annual Meeting and at such other times as the Chairman of the Council may request. The Chairman of the Council, at the request of five members of the Council, may call a special meeting at any time, at which the Executive Committee may be annulled or changed, and for such other purposes as intimated in notice of meeting.

*Section 5.*—The Executive Committee may, if necessary, refer important questions for mail ballot to the Council.

#### CHAPTER VIII.—COMMITTEES

*Section 1.*—The Executive Committee.—In addition to the duties assigned in Section 4, Chapter VII, this Committee shall have charge of the publication of the official *Journal* of the Association, and of all published proceedings, transactions, memoirs, addresses, essays, papers, programmes, etc., of the Association.

As its first meeting each year, (Sec. 4. By-Law VII) it shall appoint an Editor and a Managing Editor of the

official Journal, shall define their respective duties and fix their salaries; shall appropriate a sum from the funds of the Association which shall be available during the ensuing fiscal year for the purposes of the Editorial Board.

The Editor shall be an *ex-officio* member of Council and shall present an annual report to that body.

The managing Editor shall be an *ex-officio* member of Council and of the Executive Committee and shall present an annual report and also an interim report at each meeting of the Executive Committee.

The Editor and Managing Editor acting jointly shall appoint such assistants as may be deemed necessary for the proper conduct of the official Journal; shall fix their remunerations within the limits of the appropriated funds, and shall define their duties.

The Executive Committee shall appoint the auditor and shall have the accounts of the Treasurer audited annually or more often if desirable, and shall make an annual report on the same to the Council. The Executive Committee may meet when and where they may determine, and the Chairman shall call a meeting on the request in writing of any three members. Five members of the Committee shall constitute a quorum for the transaction of business.

**Section 2.**—To the Committee in charge of the Legislative Bureau shall be referred all matters pertaining to Provincial and Federal Medical Acts. It shall report on all legislation relating to medical affairs in the various governments, and upon all like matters proposed by medical councils or licensing bodies.

**Section 3.**—To the Committee on Medical Education shall be referred all matters pertaining to medical colleges and medical education. It shall report upon the condition of medical education throughout Canada and upon any proposed change, and suggest methods for the improvement of medical education.

**Section 4.**—To the Committee on Necrology shall be assigned the duty of collecting, as far as possible, the obituaries of members dying since the last annual meeting.

**Section 5.**—To the Committee on Amendments to the Constitution and By-laws shall be referred all matters relating to the subject, before action thereon is taken by the Council.

**Section 6.**—To the Committee on Credentials and Ethics shall be assigned the duty of considering every application for membership, enquiring into all credentials presented, and reporting upon the fitness for membership of every applicant. To this Committee all questions connected with ethics shall be referred; they shall also report each year any violation of the Code of Ethics by any member which attracts their attention as affecting the Association.

**Section 7.**—Committee on Public Health.—It shall be the duty of this Committee to place itself in communication with the Federal Board of Health, and with the various affiliated societies, and where none exist, with the prominent men of the profession, seeking information regarding the above-named subjects, and to present a report embodying anything in regard thereto that would be of interest.

**Section 8.**—To the Committee on Pharmacy shall be referred all matters relating to standardization of drugs and the examination of pharmaceutical preparations for the proper protection of the public and of the profession.

**Section 9.**—It is the duty of the Committee on Intra-Canadian Relations to endeavour to promote in the different provinces of the Dominion, a better understanding of each other's problems, thus making for a greater bond

of sympathy and a stronger feeling of unity and cooperation among the members of the profession throughout the Dominion.

**Section 10.**—It shall be the duty of the Publicity Committee to study, investigate and make reports to the Association on points of interest to the medical profession; and to seek to inform the public through the daily press or otherwise on the progress of modern scientific medicine.

**Section 11.**—It shall be the duty of the Committee on Economics to study and report upon all matters of an economic nature, affecting the welfare of the medical profession.

**Section 12.**—Special Committees may, from time to time, be appointed by the President, the Council or by the Executive Committee. They shall select their own chairman and shall perform the duties for which they are called into existence.

**Section 13.**—Each Committee shall assume such other duties as may be assigned to it by the President or the Council, or the Executive Committee. They shall make progress reports to the Executive Committee at each of the meetings of that body or at any time they may be required by the Chairman of the Council. They shall send a report in writing to the General Secretary at least two months prior to the annual meeting of the Association.

**Section 14.**—Reports of all Committees shall be printed and mailed to all members of the Association at least two weeks before the annual meeting.

**Section 15.**—No Committee shall expend any moneys nor incur any indebtedness nor obligation without the sanction of the Executive Committee.

#### CHAPTER IX.—ADDRESSES AND PAPERS

**Section 1.**—All addresses delivered at an Annual Meeting shall immediately become the property of the Association, to be published or not, in whole or in part, as deemed advisable, in the Journal of the Association.

Any other arrangements for their publication must have the consent of the author or of the reader of the same and of the Executive Committee.

**Section 2.**—All papers, essays, photographs, diagrams, etc., presented in any section, shall become the property of the Association, to be published in the official Journal of the Association or not, as determined by the Executive Committee, and they shall not be otherwise published except with the consent of the author and of the Executive Committee.

**Section 3.**—Each author of a paper read before any section shall, as soon as it has been read, hand it with any accompanying diagrams, photographs, etc., to the Secretary of the Section before which it has been presented, who shall endorse thereon the fact that it has been read in that section, and shall then hand it to the General Secretary.

#### CHAPTER X.—REFERENCE TO THE ASSOCIATION

Upon the request of 10% of the members in good standing present at an Annual Meeting, the President shall direct that any business transacted by the Council be submitted to a general business meeting of the Association.

#### CHAPTER XI.—AMENDMENTS

Amendments may be offered by any member of the Council and should be in the hands of the General Secretary three months before the Annual Meeting and published once in the *Journal*.

## Investments

UNDER CHARGE OF  
DR. T. C. ROUTLEY, 184 COLLEGE ST., TORONTO

The essential difference between a speculator in securities and an investor is that one seeks profits—the other safety, with profits. One buys with a view to selling later at a profit—the other, to secure safety of principal, with a fair interest return.

The experiences of the average speculator have been more or less alike—profits are made and losses taken—it is a very hard game to play with success, and to carry on speculating with any chance of finishing up with a profit requires a great deal more time than can usually be given to it. On the other hand, the investor by careful selection of securities has the opportunity of choosing mediums in which his principal is safe and which will yield him a fair annual return in cash. He also has the opportunity of using for his benefit the laws of compound interest.

The object of this page is to facilitate the making of safe investments by our readers, in order that the income made in their profession may be retained and be utilized through the mediums of safe investments to supply an adequate income for declining years. Without going into too much detail, in the following paragraphs an endeavor will be made to show some of the main reasons why so many so-called investments do not fulfil the hopes of their owners.

There is really only one main reason why an individual having money to invest, chooses the wrong medium. That is—inexperience. The reason for this is due to the lack of time to devote to a study of the subject. The underlying cause of most investment difficulties is greed—or desire for a large interest return or profit. Now, scientific investing is a business, or a profession, just as much so as any other profession. Success in it can only be obtained after years of careful training and studious effort, and only by constant application to the subject can the necessary knowledge and experience be gained to enable the individual to know just which investments to buy for the particular purpose he has in mind. But that constant application requires time—and time is the one thing a busy man cannot afford to use for purposes other than his own profession.

The lack of knowledge of investments is the direct cause which allows an individual to be carried away by a desire for unreasonable profits. Savings should earn a fair return, for idle money is wasteful, and they should earn all they can with safety. But, just what can be earned with safety is something that only experience, and a complete knowledge of conditions as they exist at the time of investment, can tell. Too often, the inexperienced desire a return in excess of that which can be secured with reasonable safety. It is that desire for excess income which changes the investor to a speculator.

When investing, the main thing to do is to find out the facts about the securities it is proposed to purchase—and get the facts from some responsible and experienced House—Do not act upon "tips"—above all, shun promises of very high returns,—be content with fair interest rates.

A story was told some years ago of old Chief John,

who used to run the Lachine Rapids in a "long-boat". Someone said to him, "I suppose you know every rock in the Rapids." The old Chief replied: "No, I don't, but I know where they are not." It is easy enough to find the bumps when investing—what is wanted is the safe channel.

Experience has shown that there are certain fundamental laws governing investments—laws which must be followed. If they are not, investment success cannot be hoped for. These laws, or principles, are fixed.—But, while the laws remain the same, conditions change, and it is the application of changeable conditions to the fundamental principles that make or break an investment.

With the growth of industry during the past century and the consequent distribution and increase in public wealth, the difficulties outlined above began to make their appearance. To-day they are all very much in evidence. Every year that passes sees millions of dollars lost, not altogether by speculation, but, to a large extent, by unwise investing. To meet these situations, and endeavor to overcome them, Investment Banking Houses were formed. The individuals forming these companies or partnerships, make a life study of investments. They are equipped to make full investigation into the merits or weakness of any particular security and of general financial conditions. They are prepared to look after the hundred and one little details, which the investor needs to-day. It is to the investor's advantage to seek the advice of a reputable Investment Banker when choosing his investments.

But, just as in any other profession or business, there are, of course, men who are not just exactly as they should be, so that great care should be taken to choose the right House. Let the investor go to a House of *established reputation and experience*, one in whom he can place absolute confidence. Their business is to relieve him of the onerous investigations, and to provide investments that are suitable.

Frankly, it cannot be said that if he does so, all his worries will immediately vanish, but it can be stated without any fear of contradiction that everything that can, will be done to safeguard his investments. Investment Bankers are in business to stay—they make their living by it,—and the measure of their success in business is the direct reflection of the investment success enjoyed by their clients. Their very business existence depends upon their ability to avoid the numerous pitfalls, and place their clients' funds in safe investment channels. Their chief asset is the goodwill of their clients. It does not need any great stretch of the imagination to realize how closely this goodwill is guarded, and how much care is taken in the investigations made of the securities which carry their recommendations.

Members are invited to write to the General-Secretary, Dr. T. C. Routley, 184 College St., Toronto, for information or advice regarding investments.

Inquiries will be entirely confidential, and answers will be based upon information believed to be reliable, fair and unprejudiced.

## The Association

### AUTOMOBILE EMBLEMS

During the past year the Committee in Charge of Federal Legislative Bureau of the Association has been studying the question of Group Insurance for members of the Association. In this connection it was considered advisable that a distinct Association Emblem for automobiles should be available, the advantage being evident, especially during the Association's meetings.

Designs were prepared and submitted to the

Executive at the March meeting. The design which met with approval is now being lithographed in colours and copies will be distributed to members in order to determine the number desired. Steps have been taken to protect the design by a "trade-mark".

Tenders have been invited from manufacturers in different centres. Naturally the price varies according to the size of the initial order. Distribution will be effected through the Secretary's Office.

## Book Reviews

**History of the Great War, Based on Official Documents.**  
Medical Services General History, Vol. II, by Major-General Sir W. G. Macpherson, K.C.M.B., LL.D. Pp. xi + 510 with numerous maps, charts, diagrams and photographs in text, six maps in pocket 1923, London, H. M. Stationery Office. Price 21s net.

This is the second volume of four which will deal with the general history of the medical services. It is exclusively the work of Sir William MacPherson, as was the first volume of the general history reviewed in these columns, February 23rd, page 145.

The present volume deals with the medical services of the British Expeditionary Force in France and Belgium down to the Battle of Loos, and has been compiled almost entirely from the war diaries including diaries of the administrative medical services, and from official despatches. The volume brings out the fact that the campaign on the Western Front was characterized, so far as the medical services were concerned, by the unparalleled number of wounded who came under their charge. It is on this account that the history, after describing the administrative services and the medical units generally, presents a detailed account of their strategical and tactical employment in the various battles and phases of the campaign.

Without carefully prepared schemes and organization, so as to ensure the rapid collection and evacuation of the wounded, confusion and delay were inevitable, and here the importance of this feature of the employment of the medical services in war is emphasized. In the earliest phases of the war it was not always possible to maintain that unbroken touch with the General Staff or to obtain the continuous information as to the intentions of the commanders of formations, which were so necessary if difficulty and failure were to be avoided. Some measure of the difficulties encountered by the medical services during the retreat from Mons may be gathered from the following summary of casualties.

"During the retreat, though the sickness among the troops was never serious, large numbers fell out from exhaustion and blistered feet, especially during the hot weather of the last four days of August. Though some of the field ambulances failed to record admissions, it is calculated that the approximate num-

ber of casualties from August 22 to 28 was 471 officers and 13,938 other ranks, of whom 88 officers and 1,073 other ranks were reported killed, 15 officers and 204 other ranks as having died of wounds, 147 officers and 3,115 other ranks as wounded, 219 officers and 9,546 other ranks as missing. Scarcely one-third of the number of wounded was recorded in the books of the field ambulances, and large numbers of walking wounded struggled down the road till they were taken over by evacuating units, and were probably never seen by the field ambulances."

But during the Aisne battle operations the medical services had greater opportunities for systematic methods of collecting the wounded than had been possible during this retreat or during the subsequent advance to the Aisne. In the Loos Battle no fewer than 29,720 wounded of the First Army were received into the field ambulances serving during the six days, September 25 to October 1st, 1915.

During the period of continuous battles between October 21, and November 19, 1914, divisional main dressing stations were formed by field ambulances at Bethune, Estaires, Armentieres and numerous other places, and the wounded were brought to them from advanced dressing stations established in more forward positions. The hardening of operations into trench warfare by the end of 1914 gave opportunity for further improving the organization of evacuating the wounded, with the result that by the time of the Loos Battle (September, 1915) it was found that the divisional arrangements were so good that the wounded came in more rapidly to the main dressing stations than they could be evacuated to the casualty clearing stations by the motor ambulance convoys which on some occasions were delayed by congestion of other-traffic on the roads.

The history of our medical services shows, therefore, that during the earlier operations, while the work of organization was going on, the field medical units of divisions were most in evidence, for until the Expeditionary Force had been formed into armies, each with casualty clearing stations and motor ambulance convoys allotted to it, it was difficult to carry out schemes for methodically receiving and evacuating sick and wounded. In the succeeding years, however, the casualty clearing stations became the chief centres of the medical work

with the field armies, and when put to the practical test of war, fully justified their description in the Field Service Regulations as "the pivot on which turned the whole system of collecting and evacuating sick and wounded." Hence the chapters on the later battles emphasize more the strategical employment and work of those units than the tactical employment of the field ambulances which were acting under divisional control along normal lines.

Among the numerous instructive charts is one which illustrates the general scheme of running ambulance trains after railway transport generally was organized into two groups, a northern and a southern, and after the control of trains was decentralized. The scheme looks somewhat complicated, as far as the directorate of transportation had to work in with the running of supply and other trains on the railway lines, a difficult matter when there was a demand for several ambulance trains on one line. The whole organization had to provide for immediate notification of the loading of trains at a railhead, the number of lying and sitting patients entrained, the destination of the train, and for the replenishing of its stores and its return when empty to the army garage or regulating station. All this was carried out by telephone between the transportation and individual authorities. The former were represented in army areas by the Assistant Director of Transportation, the Assistant Director of the Railway Transport, the railway transport officers at casualty clearing station railheads and at the army ambulance train garage, at General Headquarters by the Directorate of Transportation, which included the Directorate of Railway Transport; and on the lines of communication by the railway transport officer of each detaining station; the military authorities were represented in the army area by the Director of Army Medical Services and the officer commanding the ambulance train; on the lines of communication by the Assistant Director of Medical Services, Ambulance trains, and at detaining stations by the Deputy Director of Medical Services, or Assistant Director of Medical Services of the base and his embarkation staff officer and the officer commanding ambulance train. All these played their several parts in the demand for the running of trains to casualty clearing stations and back again to the garage, and arrangements as between all of them were carried out by telephone or wire, often within a few minutes.

Another interesting chart is that which shows at a glance the organization of medical services from a corps front of three divisions in an army, right down to a sea base. In any one divisional area were, in sequence, the regimental stretcher-bearers, field ambulance, stretcher-bearers, field ambulance transport (ambulance wagons and cars) and light railways; in the "Army Area" were the motor ambulance convoys, light railways, lorries and busses; and in the line of communication area and base, ambulance trains, motor ambulance convoys, ambulance barges, and, last of all hospital ships. All these formed the links from front to base of the ambulance transport service. The medical service comprised; first, the regimental aid posts, then, in sequence, the advanced dressing stations, and walking wounded dressing stations, casualty clearing stations, advanced depot medical stores and mobile laboratories; and then, in the advanced base, base stationary hospitals, general hospitals, base depot medical stores and convalescent depots.

It need hardly be said that there were numerous casualties amongst the personnel of the medical and transport service from enemy action. These were slight in 1915 and 1916, but were of exceptional severity in 1917 and 1918. The casualties at St. Omer, during a night aircraft raid (October 30th—November 1st, 1917) occurred in No. 58 General Hospital, when a staff nurse and two V.A.D. members, together with 18 patients, were

killed, and a staff nurse died of wounds, while the two other staff nurses and 58 patients were wounded.

"Amongst the many heroic deeds of nursing service during this trying time one may be specially cited on account of its tragedy and pathos. During the raid on No. 58 General Hospital, Sister Climio of the Territorial Force Nursing Service, remained in her ward singing to a nervous patient, who had just been admitted from the front line, in order to try and calm him. She continued singing, quietly sitting on his bed, when the bombs were falling, until one fell in the ward and killed her. Her patient escaped uninjured and afterwards testified to the calm courage and devotion of the Sister."

Another story of extraordinary courage and devotion is narrated of the time of the Battle of Loos, in the report of Colonel Rawnsley, the A.D.M.S., 15th Division. It concerns a French girl, who was then 17 years old and living with another woman in a shop at Loos in the Church Square. "These premises were taken as a regimental aid post by Captain Bearn, R.A.M.C., and the two women spent the whole day and night (September 25-26) in helping to carry in the wounded and carry out the dead. When the British troops were making ineffective efforts to dislodge from the next house two German snipers who were firing on the stretcher-bearers, the young girl seized a revolver from an officer and went into the back of the house and fired two shots at the snipers. She came back saying 'C'est fini,' and handed the revolver back to the officer. It is uncertain if the two shots actually killed the men, but the diversion in the rear enabled our men to effect an entrance in front. Captain Bearn states, 'I saw many examples of cool courage that day but none that excelled hers.'"

It is understood that separate histories of the medical services of the Dominion contingents are in course of preparation. Considerations of time and space have made it impossible to introduce into the present history accounts of the medical organizations of the Allied Armies, "although a description of these and of those of the enemy forces, comparing them with the British organization, would be of much interest and of great instructional value."

It is mentioned that the work of the medical services on the Western Front, and in all theatres of war, was carried out both by the permanent establishment of the Royal Army Medical Corps, though this formed but a small proportion of the army officers and other ranks except in the earliest stages, and by officers who had been engaged before the war in civil practice. The work, too, of the consulting surgeons, physicians and other specialists was carried out mainly by officers who were consultants and specialists in civil life: the details of their work is to be gathered from the volumes already published.

**The Canadian Tuberculosis Association, Twenty-Third Annual Report, with Transactions of the Annual Meeting held at Edmonton, 1923. Published by the Association, Bank Street Chambers, Ottawa.**

The report has been compiled for general distribution among those interested in tuberculosis work in Canada. The Secretary Dr. R. E. Wodehouse, O.B.E., records a year of real progress. There is a steady and gratifying decline in the death rate from tuberculosis throughout Canada. The Association is active in the assistance it renders to local effort and is carrying on a notable campaign of education over the whole Dominion. There are excellent preliminary reports of the Survey carried out late in 1923 in Wentworth County, Ontario, and of the demonstration of what can be accomplished by intensive work as undertaken at Three Rivers, Quebec. The publication of the reports of the various tuberculosis associations and sanatoriums in Canada makes the volume a useful reference annual. The Association has done a remarkable amount of work

with the small grant made to it annually by the Dominion Government. We know of no organization which has achieved such results with so little income. We trust the government will soon see its way clear to materially increase its subvention, that more widespread action may be undertaken. The grant is pitifully small in proportion to the results which might be achieved by a more liberal grant.

J. H. E.

**Methods in Medicine.** The manual of the medical service of George Dock, M.D., Sc.D., by George R. Herrmann, M.D., Ph.D., Instructor in Medicine, University of Michigan. Pp. 531 with illustrations. Price \$6.00. St. Louis: C. V. Mosby Company, 1924. Canadian Agents: McAinsh & Co., Toronto.

Physicians and surgeons who are carrying out clinical laboratory investigations will welcome this concise and comprehensive manual of clinical methods. Prepared to meet the needs of his own medical service, Dr. Dock has published the manual upon request of other clinical workers. The manual is intended to be a practical ward or bedside guide, an outline of sound minimal requirements in the complete, systematic diagnostic study of disease, detailing the essential, scientific, therapeutic and dietetic management of cases, with directions for the always important preservation of valuable data in the record of each patient. The attempt has been made to arrange logically the material collected from diverse sources, and to condense it, at the same time retaining sufficient details of the prosecution of the methods and the general interpretation of the results.

The work is divided into five parts, administrative methods, special laboratory and clinical methods, therapeutic methods, dietetic methods, and records. It is a valuable manual for the physician who has his own clinical laboratory as well as for the hospital laboratory worker and clinician.

The various tests incorporated are those which have stood the test of time in Prof. Dock's clinic, while the procedures to be followed in securing blood, urine, spinal, pleural, pericardial, and other fluids have been standardized, as have the methods of their study. The inclusion of standard diets, emergency measures such as intravenous therapy, treatment of poisoning, heart failure, oedema, uræmia, coma, shock and the management of infectious diseases make it more than a laboratory manual.

It will form a valuable addition to any physician's working library.

J. H. E.

**Fifty Years of Medical Progress 1873-1922.** By H. Drinkwater, M.D., Edin. Cr. 8vo. Pp. xii, 184, 37 illustrations. Price 10s 6d. London, 1924. H. K. Lewis & Company Ltd.

This little volume contains a brief summary of the progress of medical science and practice during the last fifty years. For the sake of easy reference the items are arranged in alphabetical order. At no time in the history of medicine has such progress been made as in the last half century, and particularly in the period since 1898 with the opening up of the work in tropical medicine following the brilliant researches of Ross. The fifty year period begins with the work of Lister and Pasteur and is followed by the researches of Koch and others in bacteriology, a science which in 1873 had not yet a name. The Roentgen ray and the studies of the endocrine organs are also new within recent years. The numerous full page portraits add to the interest of the book, and there is a good bibliography of works on the history of medicine. There are numerous misprints of names which should not have

been overlooked. The portraits become loosened with only slight handling of the book.

J. H. E.

**The Toxaemia of Acute Intestinal Obstruction; or vomiting as a pathological force.** By R. H. Parhamore, M.D., F.R.C.S. 8vo, pp. vii x 66. Price \$1.65. Toronto, 1924. The MacMillan Company.

The author has advanced the view that the visceral disabilities in eclampsia are determined mechanically through an exaggerated intra-abdominal pressure and its excursions. His views have been criticized, and the present volume is a restatement of his belief and its basis, with a refutation of the arguments advanced against his thesis. He opposes the contention that a toxic proteose absorbed from the gut in cases of intestinal obstruction is the cause of the intoxication and prefers to believe that this toxæmia, the blood nitrogen change and the kidney impairment are brought about in other ways and especially by the effects on the individual of the persistent vomiting. He associates with the vomiting, as the conspicuous feature of several physical acts in play, the straining, the tenesmus, the restlessness and other factors which have their part in increasing intra-abdominal pressure.

Further, he believes that the removal of the stimuli causing pain, the cessation of the violent efforts which persistent vomiting causes, the reduction of the distension by the passage of flatus per rectum by which the enormous increase of intra-abdominal pressure falls, are the determining factors in the cure, and that they also act mechanically. The albuminuria too he believes to be a result of the mechanical action of the increased pressure and straining, for with relief and cure the impaired kidneys become restored, and no trace of the injury is left.

J. H. E.

**The Antidiabetic Functions of the Pancreas and the Successful Isolation of the Antidiabetic Hormone, Insulin.** The Beaumont Foundation Lectures of the Wayne County Medical Society, Detroit. By Prof. J. J. R. Macleod, and Prof. F. G. Banting of the University of Toronto. 8vo. of 69 pages. Price \$1.50. St. Louis, The C. V. Mosby Company, 1923.

These form the second series of the Beaumont Foundation Lectures. It seemed most appropriate that this authoritative presentation of the past and present investigations into the physiology of the pancreas, and the story of insulin and its clinical application should be given to the profession through a lecture foundation named in honour of America's first great physiologist, who gave us our first clear conception of the process of gastric digestion. Prof. Banting tells the story of his discovery and discusses the clinical uses of insulin.

J. H. E.

**The Medical Clinics of North America.** Volume 7, Series 1923-1924. Issued serially, one number every other month. Cloth \$16.00 per year of 6 numbers, Paper \$12.00. Philadelphia and London, W. B. Saunders Company.

Number I of this volume is the Mayo Clinic number with 33 contributors. Four papers are on insulin. Seven follow on gastro-intestinal subjects including proctoscopic examination. Renal conditions, including a simple test for insufficiency and the treatment of enuresis, are followed by two papers on neoplasms and two on endocrine diseases. Hypertension, blood dyscrasias and neurological papers complete the volume. There are 66 illustrations in the text.

Number II is the Chicago number with 23 con-

tributors from various Chicago hospitals. There are several excellent articles on paediatric subjects, on blood and circulatory diseases, and on the liver and gall-bladder.

Number III is the Boston number with 421 pages and 66 illustrations. Thirty-one contributors from the Boston hospitals have presented an excellent group of papers illustrative of the work being done in that city. A multitude of subjects are discussed, including clubbed fingers, insulin, osteomalacia, carcinoma, asthma, gallstones, heart disease and the interpretation of murmurs, nervous diseases, physiotherapy and medical school work.

Number IV, the Kansas number has already received notice.

Number V is the St. Louis number and contains nineteen papers upon pituitary tumor, hypertension, nephritis, five papers on paediatric subjects, three on neurology, and others on diabetes, heart conditions, focal infection in relation to the prostate and other subjects. There are fifty seven illustrations.

In the numbers so far issued this year, the publishers have brought together a splendid collection of papers from five large medical centres, and all contain excellent clinical contributions. The series can be highly recommended to the physician who wishes to read and keep abreast of the best in medical practice.

J. H. E.

**Abstract of the Tenth Annual Report on Ophthalmic Hospitals and on Ophthalmic Progress in Egypt, 1922.** By A. F. MacCallan, C.B.E., F.R.C.S.

There are now sixteen permanent ophthalmic hospitals in Egypt. The number of new patients treated in 1922 was 133,750; the operations performed 76,035, and total attendances 1,510,020. The staff is entirely Egyptian, with a British Director.

Over seventy Egyptian surgeons are exclusively practising ophthalmology in Egypt, as a result of the creation of a special school of ophthalmology, and a complete system of ophthalmic inspection has been carried out for many years at the government primary schools in the capital towns of the frontier provinces.

J. H. E.

**The Trial of Frederick Bywaters and Edith Thompson.**

Edited by Filson Young. 8vo. Pp. xxxii x 261. Toronto (1923). Canada Law Book Company Ltd. This is another volume of the interesting "Notable

British Trials" series. It tells the story of the murder of Percy Thompson, husband of Edith Thompson. The editing of the trial with the evidence adduced, the speeches for the prisoners and prosecution, the charge to the jury and the appendices containing the letters placed in evidence, have been edited in the very excellent manner of the former volumes in the series. The editor appears as a student of psychology in the nineteen pages of introduction in which he recapitulates in narrative form the story which is unfolded at the trial. In the course of this narrative he examines the case in relation to general human justice as distinct from technical justice, and writes as follows:—"The crime was essentially sordid and commonplace; the husband was stabbed to death by the rival in his wife's affections, in the presence of and (so the prosecution alleged) with the approval of the wife. It would be difficult to imagine any circumstances which would afford a shade of justification or excuse for this extremely primitive proceeding. But the case as a whole was not sordid, because the murder formed such a small part of it, and the emotional antecedents of the act itself, illuminated by a series of the most remarkable letters that have

been made public in modern times, lift the whole story out of the commonplace. Nothing is commonplace if we know enough about it. It is commonplace for a jealous man to kill his rival, but it is not commonplace to be able to trace back his emotional history and be aware of the emotional force that ultimately swept him away on its tide." The circumstances of the marriage were in themselves not conducive to happiness. Husband and wife earned their living separately. There were no children, and they had practically nothing in common except the dormitory side of existence, which seems to have resolved itself into a chapter of bitter squabbles.

The letters presented in criminal evidence contained a great many references to attempts at administration of poison to her husband. These the editor considers as true love letters and feels that the emotion in them is both deep and true, and that they contain passages of actual beauty to find the match for which one has to look in the love letters of people far above the accused woman in poetic and literary attainments. The love they breathed being illegal, was as a matter of course the subject of unsympathetic reference in a court of law. There is little of medical evidence in the trial, but the editor's comment upon the psychological aspect of the case makes the trial an interesting study for the physician who sees so many aspects of the human mind and its varying passions.

J. H. E.

**The Diseases of the Breast.** By Willmott H. Evans, M.D., B.S., F.R.C.S., Consulting Surgeon to the Royal Free Hospital, London. Large Octavo, 495 pages with 106 illustrations, of which 15 are coloured. Price 27s 6d net. The University of London Press Ltd., 17 Warwick Square, E.C., 1923.

It may at once be said that this is one of the best written, well printed, and beautifully illustrated monographs on the subject in the English language. Every phase of the subject is covered completely and yet concisely, while the space devoted to the different affections is in due proportion to their importance. Thus carcinoma in its various aspects occupies about half the volume. It is evident also that the book is written from the storehouse of the author's personal experience as masses of statistics from other sources are conspicuous by their absence.

The operative treatment of cancer is described along more or less standard lines, with removal of both the pectoralis major and minor. It is of interest to note that the author is of the opinion that "On the whole it may be said that radium cannot, at least as at present used, do much for malignant disease of the breast," which may not meet with the entire approval of some of the workers in that field.

In conclusion, the volume cannot fail to be instructive to any reader interested in the subject. E. R. S.

**Papers and Addresses in Surgery, Selected and Revised.** By R. Hamilton Russell, F.R.C.S., Eng., Consulting Surgeon to the Alfred Hospital, the Children's Hospital, and the Queen Victoria Hospital for Women and Children, Melbourne. Small octavo, 452 pages with illustrations. Published by Allan Grant, 92 Collins St., Melbourne, 1923.

This volume, as its title indicates, includes a number of addresses on allied subjects, and hence presents considerable overlapping. It is, however, a most readable work, and perhaps may be said to be chiefly devoted to an exposition of the author's views in favour of the sacular theory of the causation of hernia. Whatever one's views may be as to the correctness of this theory, one must admit that the author presents his case very plausibly, while at the same time it is evident that his

argument is perhaps influenced by his evident connection with Hospitals for Children.

Fractions in childhood, urethral stricture, tuberculous hip, and intussusception occupy the remainder of the volume.

The presentation of the saccular theory of the causation of hernia in itself makes the book well worth reading.

E. R. S.

**Transactions of the American Association of Genito-Urinary Surgeons.** Vol. XVI, being a report of the proceedings of the thirty-fifth annual meeting, 1923. Published for the Association by Williams and Wilkins Co., Baltimore, Maryland.

This volume comprises twenty-five addresses, and the discussion thereon, which were presented at this meeting. Five of the papers, covering some fifty odd pages deal with renal and ureteral calculi, while the balance refers to nearly every phase of genito-urinary surgery.

Cunningham, Graves and Davis find that 1:3000 mercuric iodide in 12% sodium iodide solution is the most generally satisfactory pyelographic medium.

Graves and Davidoff find that under certain circumstances regurgitation from the bladder into the ureters is an experimental fact.

Smith of Boston concludes that total prostatectomy for carcinoma of the prostate is more satisfactory than partial prostatectomy plus radiation.

Three of the papers deal with renal anomalies. As presenting a bird's-eye view of recent thought in this branch of surgery, the volume is of distinct interest.

E. R. S.

**Emergency Operations.** For General Practitioners on land and sea. An illustrated manual of procedure and technique. By H. C. Orrin, O.B.E., F.R.C.S., Edin.; Surgeon, Ministry of Pensions Orthopaedic Hospital, Newcastle-on-Tyne. 135 pages. Price \$2.50. Toronto, The Macmillan Company of Canada Ltd., 1924.

The author is to be congratulated in having condensed within the limits of this small volume a good deal of technical information which, under the circumstances outlined by the title, cannot fail to be of value. Appendectomy, operation for strangulated hernia and for fracture of the skull and intracranial haemorrhage are well dealt with, though it would seem that the operation for strangulated femoral hernia carried out below Poupart's ligament would be more simple than the one above the ligament here described. In drainage operations on the gall-bladder, suture of the fundus of that organ to the parietal peritoneum is unnecessary, and tends to increase subsequent adhesions. The illustrations are good, the text simple and free from verbosity, and the general make-up of the volume excellent.

E. R. S.

**Operative Surgery, Covering the Operative Technic Involved in the Operations of General and Special Surgery.** By Warren Stone Bickham, M.D., F.A.C.S., Former Surgeon in charge of General Surgery, Manhattan State Hospital, New York, Former Visiting Surgeon to Charity and to Touro Hospitals, New Orleans. In six octavo volumes totalling approximately 5,400 pages, with 6,378 illustrations, mostly original, and separate desk index volume. Now ready—Volume I containing 850 pages with 921 illustrations, Volume II containing 877 pages with 1008 illustrations. Philadelphia and London, W. B. Saunders, Company, 1924. Cloth, \$10.00 per volume. Sold by subscription only. Desk Index free. Canadian agents: The J. F. Hartz Co., Limited.

This work differs materially from somewhat similar publications now enjoying popular favour since it is

entirely the product of the author's pen, an outgrowth as it were of his well known single volume Text-Book of Operative Surgery, and is therefore in no sense a system of surgery by various authors. The writer is certainly to be congratulated on the completion of what must have been a stupendous task, and also on the manner in which that task has been carried out.

The first half of Volume I is devoted to a consideration of the General Procedures Employed in Surgical Operations, including full reference to preparation for operation, surgical anaesthesia, the conduction of operations, and post-operative care. One is somewhat surprised at the brief reference to blood transfusion, but finds that this matter is fully dealt with in Volume II under the operations on veins. Here, also, a very little reference is made to the necessity of securing a donor whose blood is compatible with that of the recipient, and rather more stress than usual is laid on the wisdom of having a blood-relation as donor.

The balance of the first volume is occupied with very complete chapters on skin-grafting, plastic surgery, transplantation of tissues and organs, hydrocarbon prosthesis, amputations and disarticulations, excisions and resections of bones and joints. It is perhaps surprising that Furneaux Jordan's method of disarticulation at the hip-joint is not more favorably referred to.

The first half of the second volume includes chapters describing operations on practically all the tissues of the body, arteries, lymph glands, nerves, bones, joints, tendons, and so forth, while the second half is devoted to a most complete consideration of operations on the skull, brain, spine and cord. This latter portion, comprising some four hundred pages, deserves most favourable mention, and will bear comparison with any of the special monographs on this subject. The illustrations are practically all original, and while more or less schematic they well serve their purpose of clearly depicting the points under discussion. The work is essentially an encyclopaedia of operative surgery and frequently many methods are described of accomplishing more or less the same purpose, and in this case the author usually indicates those which he considers the more desirable.

If the subsequent volumes live up to the standard set by these two, it may confidently be asserted that the entire work will rapidly achieve an enviable position as a standard for reference.

E. R. S.

**Reports from the Laboratory of the Royal College of Physicians, Edinburgh.** Vol. XIV. By Oliver and Boyd, Tweeddale Court, Edinburgh.

Volume XIV of Reports from the laboratory of the Royal College of Physicians, Edinburgh, contains reprints of articles published in various scientific journals between the years 1915 to 1920. The reprints contain the contributions of workers in the above laboratory during that time and cover a wide range of subjects. There are several papers on biological chemistry, pathology and bacteriology, and also one paper on anatomy.

The report gives an excellent idea of the wide character of the research work carried on in this laboratory.

R. R. M.

**Internal Derangements of the Knee Joint, Their Pathology and Treatment by Modern Methods.** By A. G. Timbrell Fisher, M.C., F.R.C.S., Eng.; Late Hunterian Professor, Royal College of Surgeons of England; Surgeon (with charge of out-patients) Seaman's (Dreadnought) Hospital, Greenwich. Small Octavo, pages 144, with forty plates, including eighty figures. Price 12s 6d net. London, H. K. Lewis & Co., Ltd., 1924.

This most interesting volume comprises the results of the author's investigations into the pathological and

clinical aspects of the various types of internal derangements of the knee joint. About half of the work is occupied with a discussion of the various forms of injuries and diseases of the semilunar cartilages, and their treatment. The second half deals with loose bodies in the knee joint, osteo-arthritis, and other forms of derangement such as slipping patella, and rupture of the crucial ligaments and fracture of the tibial spine.

The book is well written, the phraseology exact, and numerous illustrative case histories are given. Treatment of the various lesions is fully described, and the author does not hesitate to advocate, where indicated, some of the methods which have given "bone-setters" their reputation in dealing with these cases. The value of the work is much enhanced by the numerous footnotes by Sir Robert Jones, detailing clinical examples from the enormous field of his practical experience.

The volume can be highly recommended, not only to the surgical specialist, but also to the general practitioner who may be frequently called upon to deal with, for instance, foot-ball injuries.

E. R. S.

**Operative Surgery.** By Warren Stone Bickham, M.D., F.A.C.S., Vol. III, 1001 pages with 1250 illustrations. W. B. Saunders, Philadelphia, Sole Canadian Agents, J. F. Hartz Co., Limited, Toronto.

This volume is largely occupied with a consideration of the operative surgery of the head (outside the cranium and contents) the neck, and the chest. The first 351 pages are devoted to the eyes, ears, nose and air passages, and are thus perhaps of more special than general interest. The surgery of the lips and hard and soft palate is fully discussed, and Brophy's well known technique is well illustrated. Operations on the tongue, pharynx, larynx and trachea are completely covered. It may be noted that high tracheotomy is described as the operation of choice, in contradistinction to Jackson's preference for the low operation. The surgery of the oesophagus occupies 36 pages, of which the greater part is devoted to oesophagoscopy, the extraction of foreign bodies, and the treatment of oesophageal strictures, in which the method of intermittent dilatation with bougies of fixed diameter is apparently preferred.

It is somewhat surprising to find the surgery of the thyroid gland with only 34 pages, of which part is used to discuss rather obsolete procedures such as "enucleation-resection" and operation by "fragmentation and evacuation." Partial thyroidectomy for "simple or movable goitre," as well as for "asymmetric or difficult goitre" follows very closely the Kocher technique. In dealing with exophthalmic goitre ligation of one or both superior thyroid arteries is recommended as a preliminary, and but little reference is made to the detail of subsequent operations.

Operations on the breast are well covered, the methods of Halsted, Willy Meyer and Handley being fully described, as well as the rationale on which they are based.

The last two hundred pages covers the field of thoracic surgery, and reference will be found to almost every conceivable problem. Considerable space is devoted to negative pressure chambers of one type or another, and the dangers of pulmonary collapse are perhaps rather unduly accentuated. Per-laryngeal removal of foreign bodies is fully described, as well as their transthoracic treatment in indicated cases. The treatment of wounds of the lung and pleura, removal of tumours of the lungs, and the operative treatment of pulmonary suppuration is fully referred to.

From the multiplicity of subjects covered it is evident that this volume will appeal both to the general and to the special surgeon, and in general it lives up to the high standard of the two preceding volumes.

E. R. S.

**The Practical Chemical Analysis of Blood.** By Victor Carl Myers, M.A., Ph.D., Professor and Director of the Department of Biochemistry, New York Post-Graduate Medical School and Hospital. Second revised edition, illustrated. Price \$5.00. Published by C. V. Mosby Company, St. Louis, 1924.

Myers' book has already been favourably received in a number of laboratories. The author has referred briefly to the clinical application of those biochemical methods which he describes in detail. In view of the fact that it is impossible at the present time to secure in any book a complete discussion of the significance of the recent advances in blood chemistry, we feel that the author might profitably have denoted more space to this aspect of the subject. The author has refrained from emphasizing the utility and advantages of the methods for which he is personally responsible. There is included a detailed description of the Folin-Wu system of blood analysis.

In a recent editorial in *The Lancet*, the importance of the micro-method for the determination of the sugar content of blood, in the experimental work which led to the discovery of insulin, has been emphasized. It is interesting to recall that the Myers-Bailey modification of the Lewis-Benedict method was used in this work, and is described by Myers. Some reviewers have considered the price of the book excessive. In our opinion the valuable material incorporated in this volume and the very fine bindings, etc. make the price reasonable.

C. H. B.

**An Introduction to the Study of Secretion.** By Swale Vincent. Price 10s. 6d. Published by Edward Arnold & Company, London, 1924.

It seems to be the fashion among writers of scientific books to launch a large, fairly exhaustive tome on a certain subject, and then a few years later, after giving a series of lectures on this same subject, to collect the lectures into a smaller volume and put this forth as an "introduction." Professor Swale Vincent has followed this rule in his recently published "An Introduction to the Study of Secretion," published this year by Edward Arnold and Company, London. The author's view-point in this book is, however, slightly different from that in his larger volume, "Internal Secretion and the Ductless Glands." The new book deals with the broad subject of secretion in general, whether it be milk from the mammary glands to nourish the young, or silk to form the spider's web. Approximately half the book is devoted to the question of "internal" secretion, as one would expect of this author. The last chapter (about two pages long and consisting mainly of quotations from his larger book) emphasizes the contrast between "external" and "internal" secretion, and points to the conclusion that to call the functioning of the so-called ductless glands *secretion* is a misuse of terms. The book does not pretend to go into the subject fully or exhaustively, but one who wishes to learn in a few sentences the chief characteristics of the various glands and the way in which they work, will find this small volume useful.

J. M. D. O.

We welcome the appearance of the first number of the *American Journal of Physical Therapy* published monthly by The Professional Press Inc., 17 N. Wabash Avenue, Chicago. Most of the articles are upon x-ray treatment but we note one on physiotherapy in myocardial weakness and another on the use and abuse of physical treatment. There is also a good editorial on "The Renaissance of Therapeutics" and an interesting section of abstracts of articles on physical therapy in the different branches of medicine, surgery, gynaecology and in tuberculosis.

# The Difficulties of Infant Feeding

The failure of the Mother to feed her own offspring may be due to something lacking in her own diet.

The remarkably satisfactory results obtained by the addition of Virol to the diet of artificially fed children should be anticipated by the addition of Virol to the diet of the expectant and nursing mother herself.

Virol is essentially the food for growth and development. It is peculiarly suited to the maternal needs, supplying concentrated nourishment in a form that does not tax the organs of the digestion or excretion.

By reason of its physiologically correct balance, its vitamin content, and especially because it is so easily assimilable, Virol is essentially the food for growth.



*Virol contains : Bone Marrow, Beef fat, Malt extract, Lemon Juice and Salts of Lime and Iron. Free samples will gladly be supplied to medical men on request.*

**The Food  
for  
Growth  
and  
Develop-  
ment.**

# VIROL

*Forty Million portions of Virol were given last year in 3,000 Hospitals and Infant Clinics in Great Britain.*

VIROL LTD., HANGER LANE, EALING, LONDON, W.5.

Bovril Limited, Distributors of Virol, 2725 Park Avenue, Montreal

## Books Received

**Methods in Medicine**—The Manual of the Medical Service of George Dock, M.D., Sc.D.—By George R. Herrmann, M.D., Ph.D., 521 pages, illustrated. Price \$6.00. Published by The C. V. Mosby Company, St. Louis, U. S. A.

**The Antidiabetic Functions of the Pancreas and the Successful Isolation of the Antidiabetic Hormone Insulin**—By Professor J. J. R. Macleod and Professor F. G. Banting. 69 pages, illustrated. Price \$1.50. Published by the C. V. Mosby Company, St. Louis, U. S. A.

**The Normal Child—Its Care and Feeding**—By Alan Brown, M.B. 243 pages, illustrated. Published by Frederick D. Goodchild, Toronto.

**Internal Derangements of the Knee-Joint**—Their Pathology and Treatment by Modern Methods—By A. G. Timbrell Fisher, M.C., F.R.C.S. (Eng.) 144 pages with 80 illustrations on 40 plates. Price 12s 6d net. Published by H. K. Lewis & Co., London, W.C. 1, England.

**Fighting Foes Too Small to See**—By Joseph McFarland, M.D., Sc.D. 309 pages, illustrated with 64 engravings. Price \$2.50 net. Published by F. A. Davis Company, Philadelphia, Pa.

**The Parathyroid Glands in Relation to Disease**—By H. W. C. Vines, M.A., M.D. 128 pages. Price 10s 6d net. Established by Messrs. Edward Arnold & Co., London, England.

**The Little Blue Books Mother's Series**—By Helen MacMurphy, M.D., Chief of the Division of Child Welfare. Copies may be obtained free on request from The Deputy Minister, Department of Health, Ottawa.

**Venereal Disease—Its Prevention, Symptoms and Treatment**—By Hugh Wansey Bayley, M.C. Second Edition. 176 pages, with 58 illustrations. Published by The MacMillan Company of Canada, Limited, Toronto, Ont.

**The Biology of the Internal Secretions**—By Francis X. Dercum, M.D., Ph.D. 241 pages. Price \$3.00. Published by W. B. Saunders Company, Philadelphia. Toronto Agents—The J. F. Hartz Co., Limited, Toronto.

**Operative Surgery**—By Warren Stone Bickham, M.D. Volume III. 965 pages with 6378 illustrations, many in colours. Published by W. B. Saunders Company, Philadelphia. Toronto Agents—The J. F. Hartz Company.

**Applied Pathology in Diseases of the Nose, Throat and Ear**—By Joseph C. Beck, M.D., F.A.C.S. 274 pages with 268 original illustrations including 4 color plates. Price \$7.50. Published by The C. V. Mosby Company, St. Louis, U. S. A.

**International Clinics**—By leading members of the profession throughout the world. Edited by Henry W. Cattell, A.M., M.D. Volume I, Thirty-fourth Series, 1924. 302 pages, illustrated. Published by J. B. Lippincott Company, London, Philadelphia and Montreal.

**Blood Pressure—Cause, Effect and Remedy**—By Lewellys F. Barker, M.D. and Norman B. Cole, M.D. 145 pages. Published by D. Appleton and Company, New York. Toronto Agents—Frederick D. Goodchild, Toronto.

**Barrier Charts for Health Officers**—A synopsis of Preventive Measures against Communicable Disease, in Four Tables—By S. H. Danakes, O.B.E., M.B., D.P.H., D.T.M. & H. Size of Wallet 10 inches by 5 inches. Four charts (18½ in. by 10 in.) Price 3s 6d net. Published by Ballière, Tindall & Cox, London, England.

**Diagnostic par les Méthodes de Laboratoire**—By Charles Lesieur et Georges Mouriquand. 206 pages. Price 6 fr. Published by J. B. Baillière et Fils, 19 rue Hautefeuille a Paris.

**Modern Urology**—Edited by Hugh Cabot, M.D., C.M.G., F.A.C.S. Volume II, second edition. 708 pages, illustrated with 288 engravings and 8 plates. Published by Lea and Febiger, Philadelphia and New York.

**Textbook of Psychiatry**—By Prof. Dr. Eugen Bleuler. Authorized English Edition by A. A. Brill, Ph.B., M.D. 624 pages. Price \$7.00. Published by The MacMillan Company of Canada, Ltd.

**Medical and Sanitary Inspection of Schools**—For the Health Officer, the Physician, the Nurse and the Teacher—By S. W. Newmayer, A.B., M.D. 462 pages, illustrated with 79 engravings and 6 full-page plates. Price \$4.00. Published by Lea and Febiger, Philadelphia and New York.

**The Relative Position of Rest of the Eyes and the Prolonged Occlusion Test**—By F. W. Marlow, M.D., M.R.C.S. Eng., F.A.C.S. 96 pages, illustrated with original diagrams and charts. Price \$2.50 net. Published by F. A. Davis Company, Philadelphia, Pa.

**Abt's Pediatrics**—By Isaac A. Abt., M.D. Volume III. 1051 pages with 223 illustrations. Price \$11.00 per volume. Sold by Subscription. Published by W. B. Saunders Company, Philadelphia. Canadian Agents—The J. F. Hartz Company, Limited, Toronto.

**The Circular Disturbances of the Extremities**—Including Gangrene, Vasomotor and Trophic Disorders—By Leo Buerger, M.A., M.D. 901 pages with 192 illustrations, five in colours. Price \$9.50. Published by W. B. Saunders Company, Philadelphia. Canadian Agents—The J. F. Hartz Company, Limited, Toronto.

**The Surgical Clinics of North America**—Volume 4, Number 1, February, 1924. 302 pages, illustrated. Published Bi-Monthly (Six Numbers a Year). Price: Cloth \$16.00, Paper \$12.00. Published by W. B. Saunders Company, Philadelphia. Canadian Agents—The J. F. Hartz Company Limited, Toronto.

**Sexological Essays**—By W. C. Rivers, M.R.C.S., L.R.C.P., D.P.H. 168 pages. Price 7s 6d.

# SULFARSENOL

(Sodic salt of the acid sulphurous ether of Methylol-amino-arseno-Phenol)

## IN THE TREATMENT OF SYPHILIS

### ADVANTAGES

- Reduced toxic action; 4 times less than .914.
- Perfect local and general tolerance.
- Great stability.
- Increased action.
- Painless intramuscular or hypodermic injections.
- Strong action of Wassermann reaction.
- Easy treatment of syphilis in suckling infants.

**Intramuscular treatment.** First injections twice a week. Begin with 18 centigrammes, increase rapidly up to 42 to 60 centigrammes. 1 cc. of water for 6 centigrammes of the drug. Inject very slowly in the buttock or the dorsi-lumbar muscles.

**Hypodermic treatment** for sucklings, children, old and weak people. Give first small doses at short intervals, increase progressively at longer intervals as tolerance is established, to one centigramme per kilogramme. 1 cc. of water for 5 or 6 centigrammes of the drug. Inject slowly in the flanks, in the back, between the scapulae. There is no pain if the drug is injected well under the skin and in sufficient dilution.

**Intravenous treatment** Begin with 6 centigrammes and repeat the five first injections every three days and after (from 36 centigrammes) every 4 or 5 days, 1 or 2 cc. of water are sufficient, even for the strongest doses.

### COMPLICATIONS OF GONORRHOEA

"For the treatment of complications of gonorrhoea the intravenous route is the best. I have tried this drug (**sulfarsenol**) on patients with most of the complications that are to be met with, such as arthritis, rheumatism, hyperkeratosis and epididymitis. The results were remarkably good but **the effect in epididymitis was extraordinary**" (F. Carminow Doble, M.R.C.S. Eng.)

Intramuscular (or subcutaneous) injections of 18 to 30 centigrammes, once daily for 4 or 5 days, may also be administered.

**Other indications** Recurrent fever—Vincent's Angina—Malaria—Sleeping sickness.

**For doses—see December Issue of the Canadian Medical Association Journal, page 943.**

Samples and Literature; **J. I. EDDE**, New Birks Bldg., Montreal.

**Diseases of the Breast**—By Willmott H. Evans, M.D., B.Sc., F.R.C.S. 495 pages with 106 illustrations, of which 15 are coloured. Price 27s 6d net. Published by The University of London Press, Limited, 17 Warwick Square, E.C.4, London, England.

**Operative Surgery**—Volumes I. and II.—By Warren Stone Bickham, M.D., F.A.C.S. Volume I. contains 850 pages with 921 illustrations. Volume II. contains 877 pages with 1008 illustrations. Price Cloth, \$10.00 per volume. Published by W. B. Saunders Company, Philadelphia and London. Toronto Agents—The J. F. Hartz Co., Limited.

**Insanity—In Every Day Practice**—By E. G. Younger and G. W. Smith. 134 pages. Published by Baillière, Tindall & Cox. Toronto Agents—The MacMillan Company of Canada, Ltd.

**What Every Mother Should Know**—By Charles G. Kerley, M.D. 103 pages. Price .50 cents. Published by Paul B. Hoeber, Inc., New York City.

**The Toxaemia of Acute Intestinal Obstruction**—By R. H. Paramore, M.D. Lond., F.R.C.S. Eng. 66 pages. Price \$1.65. Published by The MacMillan Company of Canada, Limited.

**Production of Acidophilus Milk on a Large Scale for General Use.**—Acidophilus milk is a pleasant, nutritious food beverage, equal and, in fact, superior to almost all other forms of "buttermilk." A glassful or more with one or more of the daily meals is the ideal way for it to be taken. For this purpose, it should be available at moderate cost and obtainable without special effort. It should be produced and supplied by the dairy in the same way that other forms of milk are supplied. Investigation has shown that it is possible, and C. C. Bass, New Orleans, describes a practical method of production that meets the need. The method differs from the methods of producing acidophilus milk previously used chiefly in that the milk is sterilized by interval heating at a temperature considerably lower than when it is sterilized in the autoclave, and the machinery and facilities that are already available in any well equipped dairy are used. It is believed that this method will take the place of the method of production formerly used, which has proved quite burdensome on the bacteriologic laboratories of physicians and others. Sterilizing milk by superheating it in the autoclave impairs the taste and probably lessens its nutritive value. What is probably still more important, it is quite likely that such autoclave milk may itself impair the digestion and health when it is consumed in large quantities over long periods of time. It is all right for therapeutic purposes, for relatively short periods of time; but, for the purpose of maintaining an acidophilus flora for prevention, it would be kept up indefinitely. When made and supplied by dairies according to the method described, Bass says acidophilus milk should not cost any more than other kinds of "buttermilk." In fact, acidophilus milk of high quality, made by

this method, is now delivered to the hospitals and to the homes of consumers in New Orleans for 13 cents a quart, and in Atlanta for 15 cents.—*Jour. Am. Med. Ass.*, May 10, 1924.

**Localization of Spinal Block by Means of Iodized Oil.**—In a case cited by Ethel C. Russell, Philadelphia (*Journal A. M. A.*, May 31, 1924), in view of the fact that (1) the history was not unlike that of a cord tumor without pain but with motor symptoms at onset, (2) the helplessness of the patient with incontinence, and (3) the negative evidence of any other disease, the establishment of a lesion causing a spinal block or proof of its absence was most desirable. Accordingly, 2 c.c. of iodized oil was introduced into the cistern magna, and roentgenograms were taken of the thoracic spine. On roentgen-ray examination the impervious material was seen opposite the body of the fifth dorsal vertebra. Following the injection, there was slight pain in the distribution of the seventh cord segment and localized sweating over adjacent vertebrae. Both of these phenomena disappeared during the second twenty-four hours after injection. The patient had no convulsions, rise of temperature or any other abnormal clinical manifestations. The conclusion was thus made of an obstruction at the fifth dorsal vertebra or seventh thoracic segment of the cord, and surgery was recommended. Laminectomy was performed and a tumor was removed at the level indicated. The tumor was located on the anterior surface of the cord, intradurally, and was approximately 4 or 5 cm. in length. The gross appearance was that of a fibroma. Although exceedingly friable, it was readily separated from the cord, with no evident injury to it.—*Jour. Am. Med. Ass.*, May 31, 1924.

## TWO ORIGINAL FROSST FORMULAE NOW MADE IN WHITE AND COLORED TABLETS

**ANTIPYRETIC**

**ACETOPHEN AND PHENACETIN  
COMPOUND**

**TABLET NO. 217 FROSST**

R Acetophen..... 3½ grs.  
Phenacetin ..... 2½ grs.  
Caffeine Citrate .. ½ gr.

**ANALGESIC****ANTJ-NEURALGIC**

**ACETOPHEN AND PHENACETIN COMP.  
WITH CODEINE**

**TABLET NO. 222 FROSST**

R Acetophen..... 3½ grs.  
Phenacetin ..... 2½ grs.  
Caffeine Citrate .. ½ gr.  
Codeine Phosphate... ½ gr.

**TABLET NO. 257 FROSST**

The same formula as No. 217 above  
COLORED PINK

**TABLET NO. 262 FROSST**

The same formula as No. 222 above  
COLORED GREY

AVOID  
IMITATIONS

*Charles E. Frosst & Co.*

MONTREAL - CANADA

SPECIFY  
FROSST

## URASAL

Indicated in the treatment of High Blood Pressure.

*Ask for Literature—Free Bottle to Physicians.*

**FRANK. W. HORNER, LIMITED**

**"The-All-Canadian-House"**

TORONTO - MONTREAL - WINNIPEG - VANCOUVER

**The Prophylaxis of Varicella with Convalescents' Serum.**—Nine infants exposed to varicella were given from 3 to 4.5 c.c. of convalescents' serum intramuscularly within from one to six days after exposure. A. A. Weech, Baltimore (*Journal A. M. A.*, April 19, 1924), says that eight of them did not contract the disease. In the ninth infant an extremely mild attack developed after an unusually long incubation period (twenty-two days). The serum used was obtained from children in whom the disease had developed from ten to twenty days previously.

**Movement of Diaphragm with Patient in Lateral Posture.**—Tasker Howard, points out that the peculiar action of the diaphragm in the lateral posture is responsible for the fact that: Breath sounds are louder over the down side. Râles are heard best on the down side. A lower lobe is most at rest when the patient lies on the opposite side.—*Jour. Am. Med. Ass.*, April 19, 1924.

**The Pernicious or Hemolytic Anemia of Pregnancy.**—Two cases are reported by V. C. Rowland, Cleveland, and attention is directed to the fact that the hemolytic anemia of pregnancy closely resembles pernicious anemia; and, although the primary mortality is high,

the anemia, once overcome, does not recur. The anemia comes on insidiously, and may become apparent during the latter months of pregnancy or during the puerperium. Labour is apt to come on prematurely and is characteristically short, relatively painless and with a minimum of bleeding. Stillbirths in neglected cases are frequent, and there may be sudden collapse and death of the mother after parturition. Transfusion and arsenical treatment should be carried out vigorously to tide the patient over the critical period. All toxic pregnant patients should be examined for anemia. The condition should be more widely known, especially among obstetricians, so that an early diagnosis may be made and preventive treatment carried out.—*Jour. Am. Med. Ass.*, Feb. 2, 1924.

**Children Bald After Roentgen-Ray Treatment of Ringworm.**—Cases have occurred of baldness of children who have been treated at a special institute established under the Metropolitan Hospitals Board for the roentgen-ray treatment of ringworm of the scalp. Wigs have had to be provided. The ministry of health has therefore been requested to investigate the treatment.

### PROFESSOR AUGUST v WASSERMANN

PRESENTS HIS LATEST PREPARATION

## HISTOPLAST

FURUNCULOSIS CURED IN A NATURAL MANNER BY MEANS OF CONVERSION OF THE TISSUE.

HISTOPLAST is a plaster containing an antigen which when placed over the seat of staphylococcus infection the inflamed skin absorbs the staphylococcus antigen.

We herewith present this new healing method, based on immunity thesis scientifically established by August v. Wassermann, to the medical public, and hope to thus place in the hands of the practitioner a rapid and certain remedy, working on natural lines and on biological basis, for one of the most troublesome affections known, tedious to patient and physician alike.

Results have proved that this preparation, in every way, answers the claims put forward.

*Samples and literature will be sent to medical men on request*

If your druggist is unable  
to supply write direct to

THE WINGATE CHEMICAL COMPANY LIMITED  
468 St. Paul St. West --- Montreal

